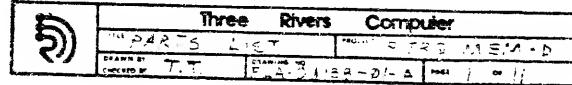


PERQ MEMORY BOARD

10/19/81

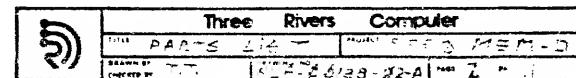
REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
U1	74S374	4
U2	UPD416C2	20
U3	UPD416C2	20
U4	UPD416C2	20
U5	UPD416C2 SUB PARTS	20
U6	UPD416C2 (MK4116-3) (F16K4DC)	20
U7	UPD416C2	20
U8	UPD416C2	20
U9	MPD416C2	20
U10	748241	4
U11	74S374	4
U12	UPU416C2	20
U13	UPU416C2	20
U14	UPU416C2	20
U15	UPU416C2 SUB PARTS	20
U16	UPU416C2 (MK4116-3) (F16K4DC)	20
U17	UPU416C2	20
U18	UPU416C2	20
U19	UPD416C2	20
U20	74LS166 (16 PIN SOCKET)	10
U21	74S374	8
U22	74S241	4
U23	UPD416C2	20
U24	UPD416C2	20
U25	UPD416C2	20
U26	UPD416C2 SUB PARTS	20
U27	UPD416C2 (MK4116-3) (F16K4DC)	20
U28	UPD416C2	20
U29	UPD416C2	20
U30	UPD416C2	20
U31	748374	5
U32	UPD416C2	20
U33	UPD416C2	20
U34	UPD416C2	20
U35	UPD416C2 SUB PARTS	20
U36	UPD416C2 (MK4116-3) (F16K4DC)	20
U37	UPD416C2	20
U38	UPD416C2	20
U39	UPD416C2	20
U40	74L8166 (16 PIN SOCKET)	10



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REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
U41	74S374	8
U42	UPD416C2	20
U43	UPD416C2	20
U44	UPD416C2	20
U45	UPD416C2 SUB PARTS	20
U46	UPD416C2 (MK4116-3) (F16K4DC)	20
U47	UPD416C2	20
U48	UPD416C2	20
U49	UPD416C2	20
U50	74S374	7
U51	74S374	5
U52	UPD416C2	20
U53	UPD416C2	20
U54	UPD416C2	20
U55	UPD416C2 SUB PARTS	20
U56	UPD416C2 (MK4116-3) (F16K4DC)	20
U57	UPD416C2	20
U58	UPD416C2	20
U59	UPD416C2	20
U60	74LS166 (16 PIN SOCKET)	9
U61	SPARE	
U62	UPD416C2	20
U63	UPD416C2	20
U64	UPD416C2	20
U65	UPD416C2 SUB PARTS	20
U66	UPD416C2 (MK4116-3) (F16K4DC)	20
U67	UPD416C2	20
U68	UPD416C2	20
U69	UPD416C2	20
U70	74S374	7
U71	74S374	14
U72	UPD416C2	20
U73	UPD416C2	20
U74	UPD416C2	20
U75	UPD416C2 SUB PARTS	20
U76	UPD416C2 (MK4116-3) (F16K4DC)	20
U77	UPD416C2	20
U78	UPD416C2	20
U79	UPD416C2	20
U80	76LS166 (16 PIN SOCKET)	9



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REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
U81	74S280	6
U82	74S374	4
U83	UPD416C2	20
U84	UPD416C2	20
U85	UPD416C2	20
U86	UPD416C2 SUB PARTS	20
U87	UPD416C2 (MK4116-3) (F16K4DC)	20
U88	UPD416C2	20
U89	UPD416C2	20
U90	UPD416C2	20
U91	74LS166 (16 PIN SOCKET)	10
U92	74S374	8
U93	74S374	14
U94	74S374	4
U95	UPD416C2	20
U96	UPD416C2	20
U97	UPD416C2	20
U98	UPD416C2	20
U99	UPD416C2	20
U100	UPD416C2	20
101	UPD416C2 SUB PARTS	20
U102	UPD416C2 (MK4116-3) (F16K4DC)	20
U103	UPD416C2	20
U104	UPD416C2	20
U105	UPD416C2	20
U106	UPD416C2	20
U107	UPD416C2	20
U108	UPD416C2	20
U109	UPD416C2	20
U110	UPD416C2	20
U111	74LS166 (16 PIN SOCKET)	10
U112	74S374	8
U113	74S374	5
U114	UPD416C2	20
U115	UPD416C2	20
U116	UPD416C2 SUB PARTS	20
U117	UPD416C2 (MK4116-3)	20
U118	UPD416C2 (F16K4DC)	20
U119	UPD416C2	20

PERQ MEMORY BOARD

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REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
U120	UPD416C2	20
U121	UPD416C2 (MK4116-3) (F16K4DC)	20
U122	74S374	7
U123	UPD416C2	20
U124	UPD416C2	20
U125	UPD416C2	20
U126	UPD416C2 SUB PARTS	20
U127	UPD416C2 (MK4116-3)	20
U128	UPD416C2 (F16K4DC)	20
U129	UPD416C2	20
U130	UPD416C2	20
U131	74LS166 (16 PIN SOCKET)	9
U132	74S374	7
U133	74S74	14
U134	74S374	5
U135	UPD416C2	20
U136	UPD416C2	20
U137	UPD416C2	20
U138	UPD416C2 SUB PARTS	20
U139	UPD416C2 (MK4116-3)	20
U140	UPD416C2 (F16K4DC)	20
U141	UPD416C2	20
U142	UPD416C2	20
U143	SPARE	
U144	74S51	3.6
U145	UPD416C2	20
U146	UPD416C2	20
U147	UPD416C2	20
U148	UPD416C2 SUB PARTS	20
U149	UPD416C2 (MK4116-3)	20
U150	UPD416C2 (F16K4DC)	20
U151	UPD416C2	20
U152	UPD416C2	20
U153	74LS166 (16 PIN SOCKET)	9
U154	74S280	6
U155	UPD416C2	20
U156	UPD416C2 SUB PARTS	20
U157	UPD416C2 (MK4116-3)	20
U158	UPD416C2 (F16K4DC)	20
U159	UPD416C2	20
U160	UPD416C2	20

PERQ MEMORY BOARD

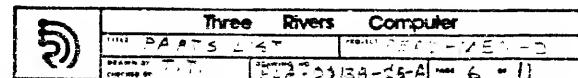
10/19/81

REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
U161	UPD416C2 (MK4116-3) (F16K4DC)	20
U162	UPD416C2 (MK4116-3) (F16K4DC)	20
U163	74S175	6
U164	74S153	6
U165	74S279	14
U166	74S74	3
U167	UPD416C2	20
U168	UPD416C2	20
U169	UPD416C2 SUB PARTS	20
U170	UPD416C2 (MK4116-3)	20
U171	UPD416C2 (F16K4DC)	20
U172	UPD416C2	20
U173	UPD416C2	20
U174	UPD416C2	20
U175	74S139	6,26
U176	74S74	3
U177	74S08	3
U178	SPARE	
'179	74SD4	16
U180	74SD4	16
U181	74SD4	16
U182	74SD4	16
U183	74SD4	17
U184	74SD4	17
U185	74SD4	17
U186	74SD4	17
U187	74SD4	18
U188	74SD4	18
U189	74SD4	18
U190	74SD4	18
U191	74SD4	19
U192	74SD4	19
U193	74SD4	19
U194	74S04	19
U195	74S258	15
U196	74S258	15
U197	74S258	14
U198	74S258	14
U199	74S258	14

PERQ MEMORY BOARD

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REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
U201	74S112	24
U202	74S112	24
U203	74S112	25
U204	74S00	4,5
U205	74LS374	27
U206	74S37	25
U207	74S00	14, 22, 26, 27
U208	74LS163	22
U209	74LS374	22
U210	74S02	6, 14, 15, 23
U211	74LS374	15
U212	74LS197	14
U213	74LS374	23
U214	74S112	24
U215	74S112	24, 25
U216	74S112	25
U217	74S03	25, 27
U218	AM27S29 (HM1-7649-6) (74S472) (TBP1BS42) (20 PIN SOCKET)	27
U219	74S175	27
U220	74S32	22, 23, 24
U221	74LS374	22
U222	74LS174	22
U223	74S197	22
U224	74LS393	15
U225	74LS197	14
U226	74LS374	23
U227	74S112	24
U228	74S30	24
U229	74S32	25, 27
U230	AM27S29 (HM1-76A9-6) (74S472) (TBP18S42) (20 PIN SOCKET)	27
U231	74S10	23, 25
U232	74S74	22, 23
U233	74LS163	22
U234	74LS240	23
U235	74S197	22
U236	74LS393	14
U237	74S138	23
U238	74S112	24
U239	74S11	24, 25
U240	74S112	25



PERQ MEMORY BOARD

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REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
U241	XTAL K1100A (14 PIN SOCKET)	24
U242		
U243	74S04	25, 26
U244	74LS163	26
U245	AM27S29 (HMI-7649-6) (74S472) (TBP18542) (20 PIN SOCKET)	26
U246	74S374	26
U247	74S225	13
U248	74S225	13
U249	74S374	13
U250	74S112	12
U251	74S00	12, 23, 25
U252	74S112	12
U253	74S20	12
U254	74S112	26
U255	74S162	26
U256	AM27S29 (HMI-76496) (74S472) (TBP18S42) (20 AN SOCKET)	26
U257	74S374	26
.58	74S374	11
U259	74S32	13, 25
U260	SPARE	
U261	7643-5 (18 PIN SOCKET)	11
U262	7643-5 (18 PIN SOCKET)	11
U263	7643-5 (18 PIN SOCKET)	11
U264	74S374	11
U265	74S225	11
U266	74S225	11
U267	74S32	11, 12
U268	74S195	12
U269	74S195	12
U270	74S37	12, 25
U271	SPARE	
U272	74S74	26
U273	74S08	26
U274	74S74	26
U275	74S280	3
U276	74S280	3

7/17/80

PRQ-PCB-MEM-D

RESISTORS

REGISTER	VALUE	PAGE
R1	RC07GF102J	1K
R2	RC07GF271J	270 μ
R3	RC07GF102J	1K
R4	RC07GF470J	47 μ
R5	RC07GF102J	1K
R6	RC07GF102J	1K
R7	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R8	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R9	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R10	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R11	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R12	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R13	NOTE: ANOTHER SUITABLE SUBSTITUTE IS 785-3-R22 (22)	17
R14		17
R15	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R16	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R17	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R18	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R19	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R20	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
1	785-3-R33 (33 μ)	(4310R-102-330) (33 μ)
R22	785-3-R33 (33 μ)	(4310R-102-330)
R23	RC07GF102J	1k
R24	JA41J1	THERMISTOR
R25	RC07GF102J	1K
R26	RC07GF102J	1K
R27	RC07GF102J	1k
R28	RC07GF102J	1k
R29	RC07GF102J	1k
R30	RC07GF102J	1k
R31	RC07GF330J	33 μ
R32	RC07GF102J	1k
R33	RC07GF330J	33 μ
R34		
R35	RC07GF102J	1k
R36	RC07GF102J	1k
R37	RC07GF102J	1k
R38	RC07GF330J	33 μ
R39	RC07GF100J	10 μ
R40	CB4G75	47 μ

PERQ MEMORY BOARD

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REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
D2	IN4004	24
D3	IN4004	24
L1	WEE-1.0 uH (1uH)	24
L2	WEE-1.0 uH (1uH)	24
L3	6317-4 (coil) (0.08uH)	24
Q1	2N3866	24
Q2	Lm320LZ-5.0	20
QTY	SOCKETS	
1	514AG37D or 814AG11D	U241
8	516AG37D or 816AG11D	U20, U40, U80, U91, U111, U31, U153
3	518AG37D 04 818AG11D	U261, U262, U263
4	520AG37D or 820AG11D	U218, U230, U245, U256
C1	202A200225 MI	
C2	202A200225 MI	
THRU		
C53	202A200225 MI	
C54	CY15C103 M	
THRU		
C70	CY15C103 M	
C71	202A200225 MI	
C72	202A200225 MI	
C73	CY15C103 M	
THRU		
C89	CY15C103 M	
C90	202A200225 MI	
C91	202A200225 MI	
C92	CY15C103 M	
THRU		
C99	CY15C103 M	
C100	202A200225 MI	
C101	CY15C103 M	
THRU		
C108	CY15C103 M	
C109	202A200225 MI	
C110	202A200225 MI	

PERQ MEMORY BOARD

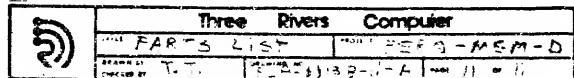
10/19/81

REFERENCE DESIGN	PART NUMBER	SCHEMATIC PAGE #
C111	CY15C103 M	
THRU		
C118	CY15C103 M	
C119	202A200225 MI	
C120	CY15C013 M	
THRU		
C127	CY15C103 M	
C128	202A200225 MI	
C129	202A200225 MI	
C130	CY15C103 M	
THRU		
C137	CY15C103 M	
C138	202A200225 MI	
C139	CY15C103 M	
THRU		
C146	CY15C103 M	
C147	202A200225 MI	
C148	202A200225 MI	
C149	CY15C103 M	
THRU		
C165	CY15C103 M	
C166	202A200225 MI	
C167	202A200225 MI	
C168	CY15C103 M	
THRU		
C184	CY15C103 M	
C185	202A200225 MI	
THRU		
C236	202A200225 MI	
C237	CY15C103 M	
THRU		
C242	CY15C103 M	
C243	202A200225 MI	
C244	CY15C103 M	
THRU		
C250	CY15C103 M	

PERQ MEMORY BOARD

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REFERENCE DESIGN	PART NUMBER	SCHMATIC PAGE #	
C251	202A200225 MI		
THRU			
C258	202A200225 MI		
C259	CY15C103 M		
C260	202A200225 MI		
C261	202A200225 MI		
C62	CY15C103 M		
THRU			
C266	CY15C103 M		
C267	202A200225 MI		
C268	CY15C103 M		
THRU			
C277	CY15C103 M		
C278	202A200225 MI		
C279	202A200225 MI		
C280	CY15C103 M		
THRU			
C294	CY15C103 M		
C295	CY15C103 M		
C296	DD101	100 pf	24
297	DD102	.001 uf	24
298	DD181	180 pf	24
C299	DD270	.27 pf	12
C300	CY15C103 M		
THRU			
C308	CY15C103 M		
C309	202A200225 MI		
THRU			
C326	202A200225 MI		



MEM - D

SUBASSEMBLY DIRECTORY

Drawing Number Description

PLA-00138-01-A MEM - D Parts List

-02-A "

-03-A "

-04-A "

-05-A "

-06-A "

-07-A "

-08-A "

-09-A "

-10-A "

PLA-00138-11-A MEM - D Parts List

GUA-00138-01-A Gate Utilization

SDA-00138-01-A Sub Assembly Directory

SDA-00138-02-A Sub Assembly Directory

SSA-00138-01-A PRO-SK4-MEM-D

SSA-00138-02-A PRO-SK1-MEM-D

SCA-00138-01-A MEM-Block Diagram

 -02-A MEM-Block Diagram

 -03-A Data Input - Parity

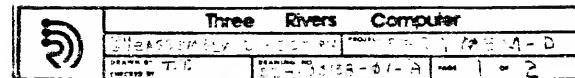
 -04-A Data Input : W0, W1

 -05-A Data Input : W2, W3

 -06-A Data Output

 -07-A Data Output

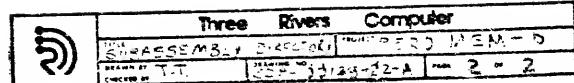
 -08-A Data Output



MEM - D

SUBASSEMBLY DIRECTORY

<u>Drawing Number</u>	<u>Description</u>
SCA-00138-09-A	Memory Shifter
-10-A	Memory Shifter
-11-A	Video Output
-12-A	Video Output
-13-A	Video Output
-14-A	Address Sel
-15-A	Address Sel
-16-A	Memory Drivers 3
-17-A	Memory Drivers 2
-18-A	Memory Drivers 0
-19-A	Memory Drivers 1
-20-A	Typical Ram Chip
-21-A	Ram Array
-22-A	I/O Registers
-23-A	I/O Registers
-24-A	Clock Generator
-25-A	Clock Generator
-26-A	Horizontal State
SCA-00138-27-A	Memory State



GATE UTILIZATION

PRQ-PCB-MEM-D

LEGEND

INPUT OUTPUT

1, 2 - 3, 4

74S00 U251

1, 2-3 23
4, 5-6
10, 9-8 25
13, 12-11 12

74S04 U243

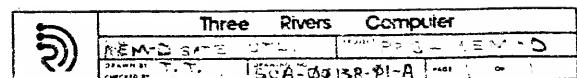
1-2
3-4 26
5-6 26
9-8 26
11-10 25
13-12

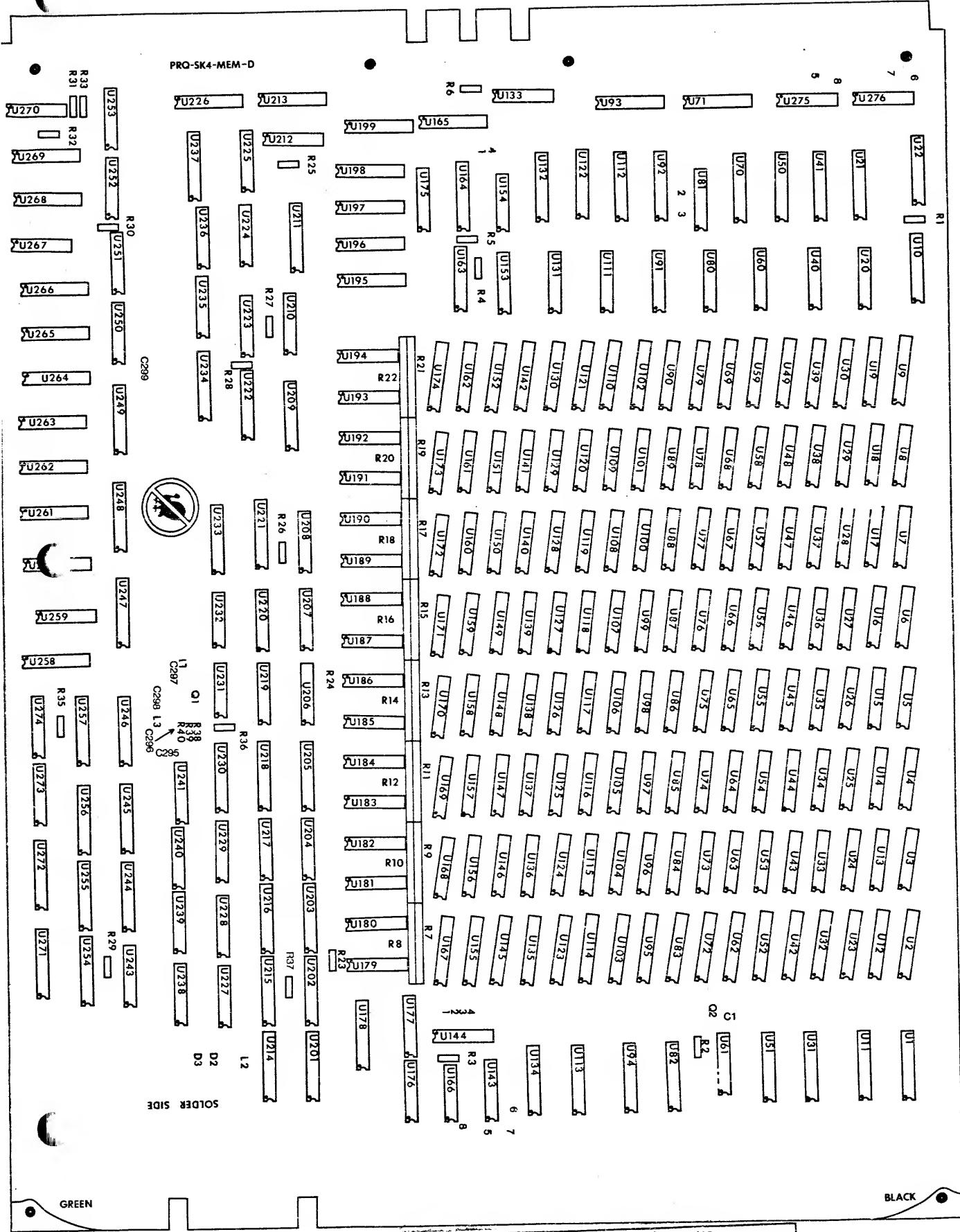
74S32 U259

1, 2-3
4, 5-6 25
10, 9-8 13
13, 12-11

74S74 U274 U272

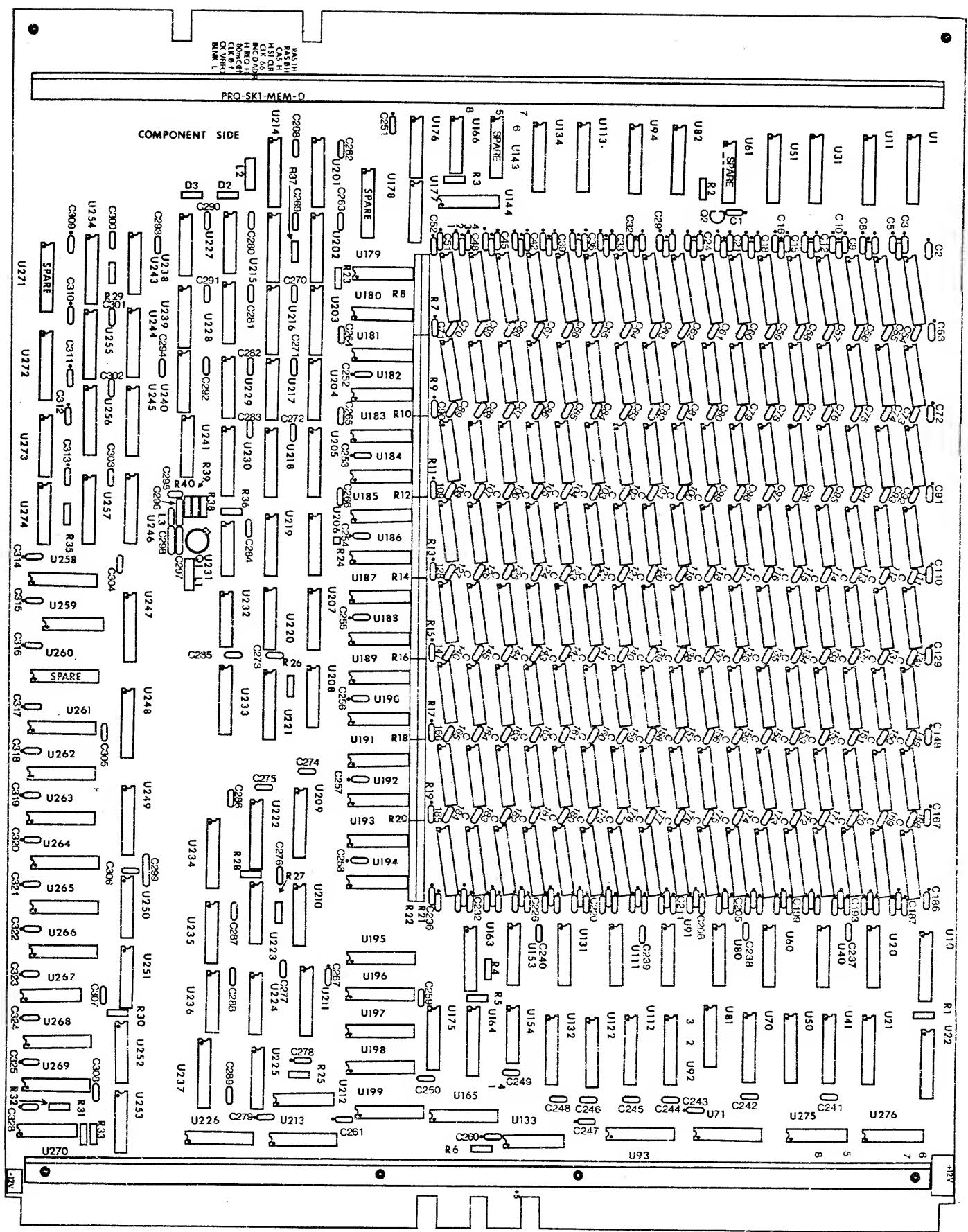
1, 2, 3, 4-5, 6
13, 12, 11, 10-9, 8 26

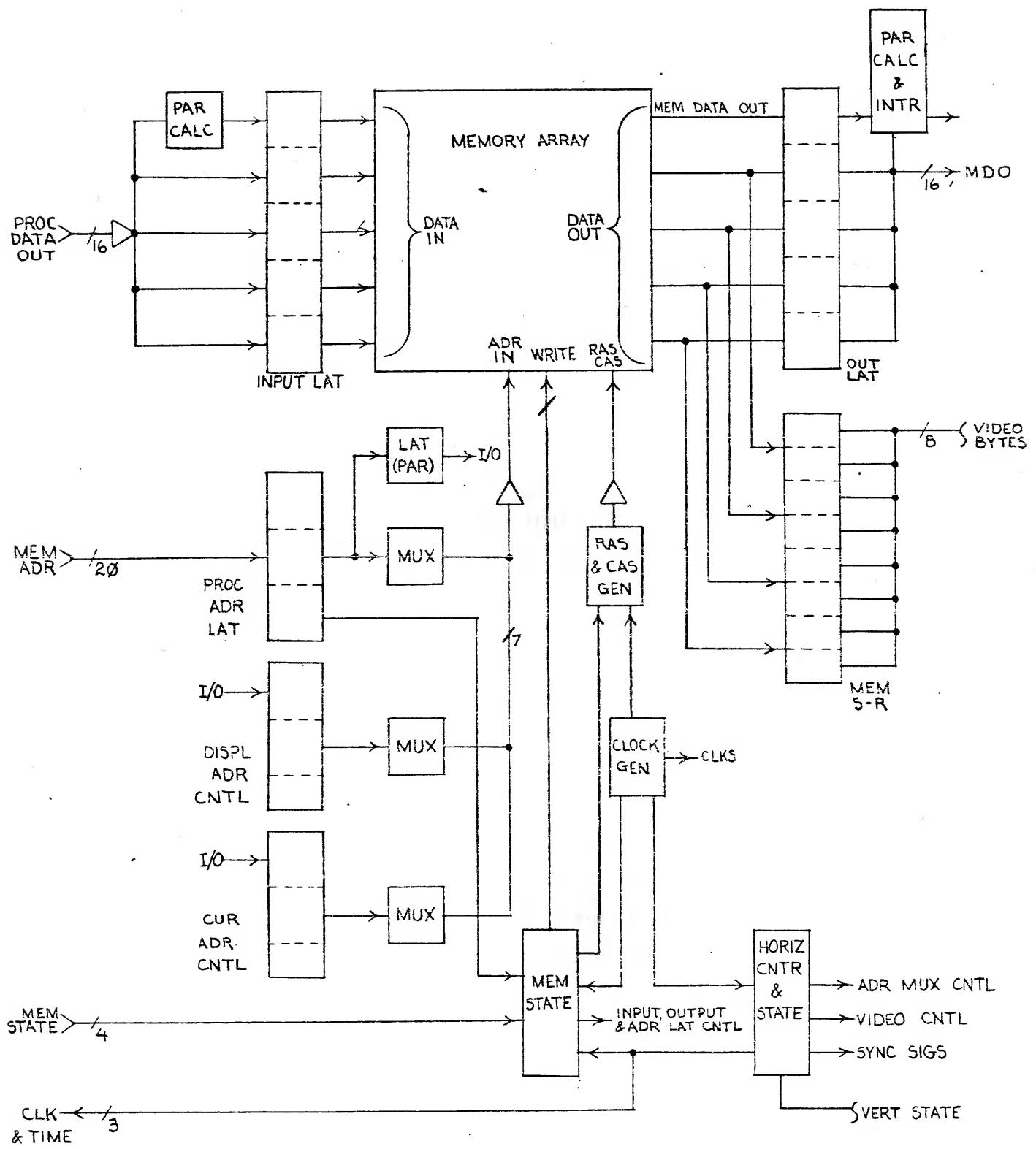


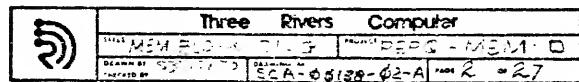
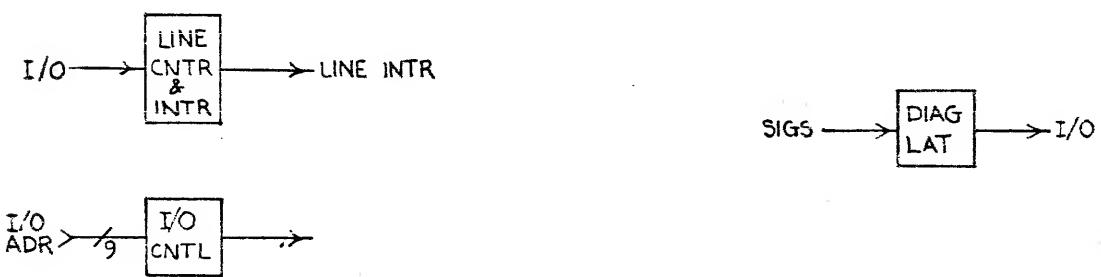
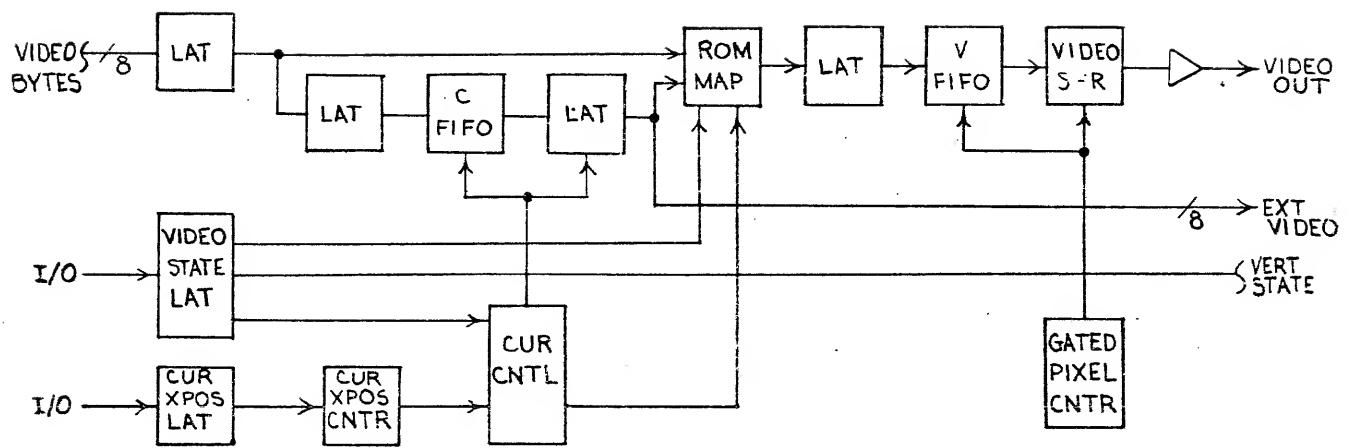


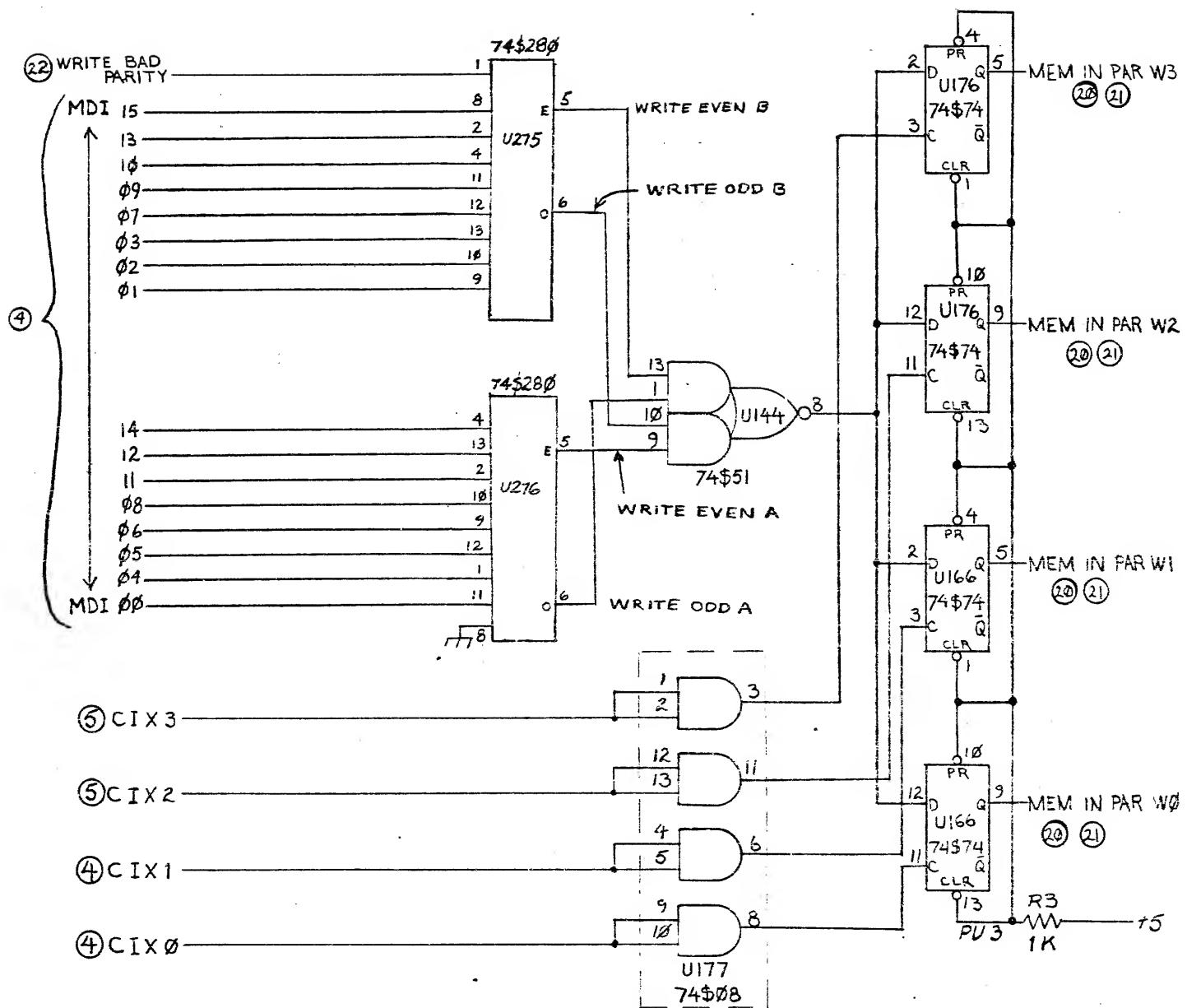
Three Rivers Computer

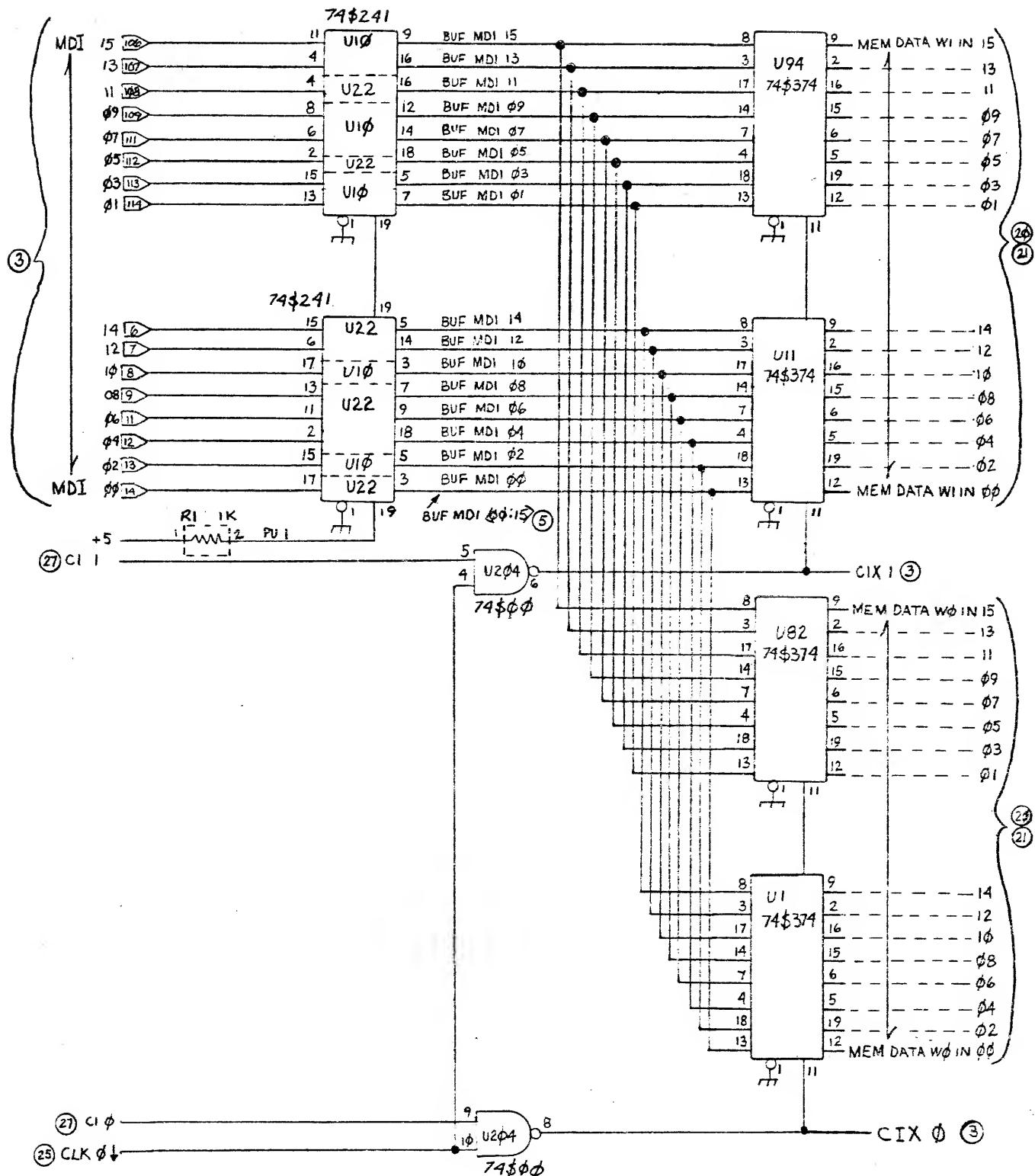
PRQ-SK-0239-D 18 July, 1980

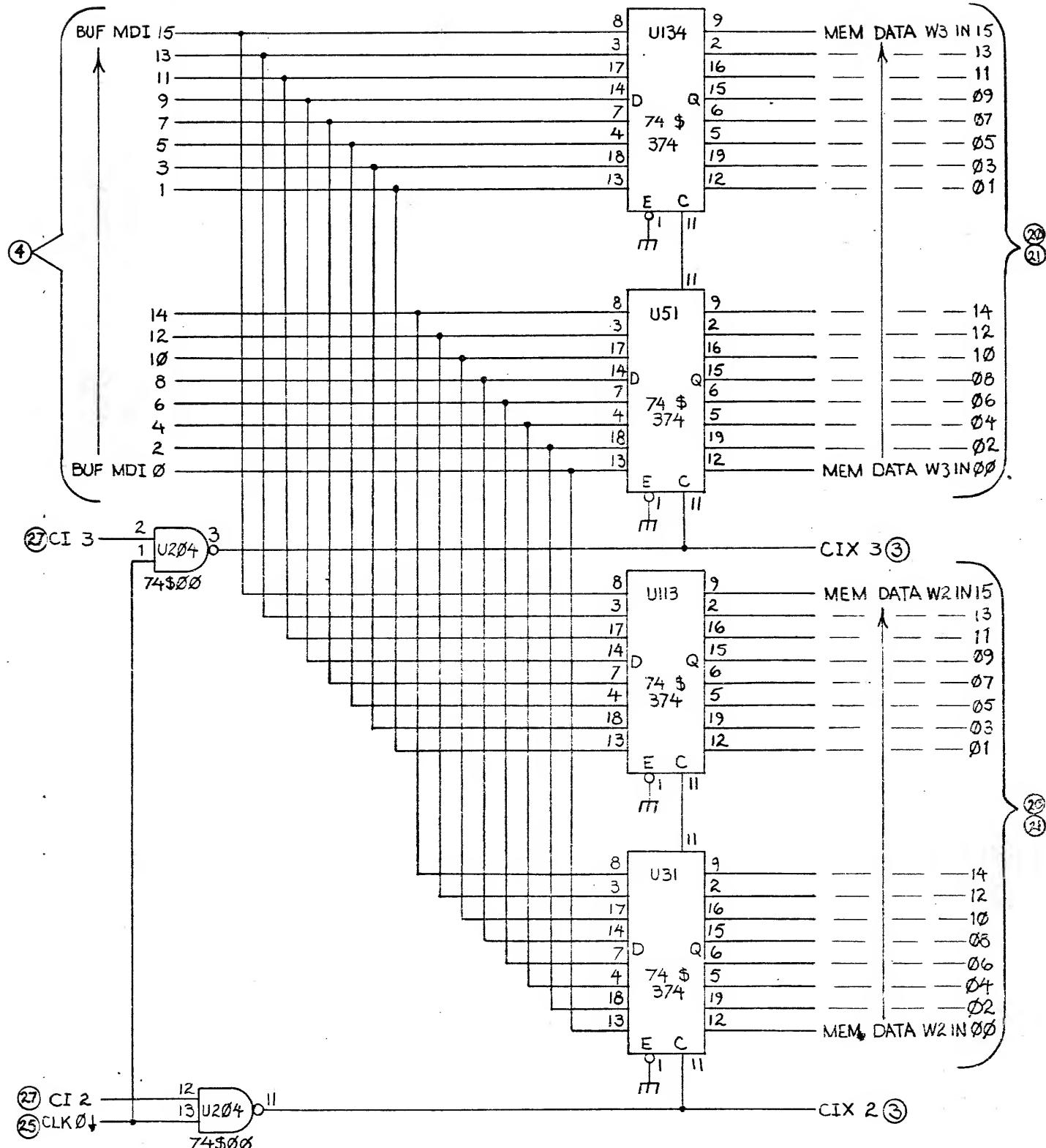


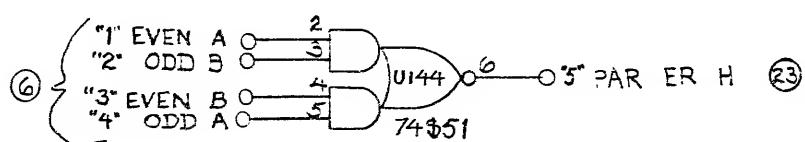
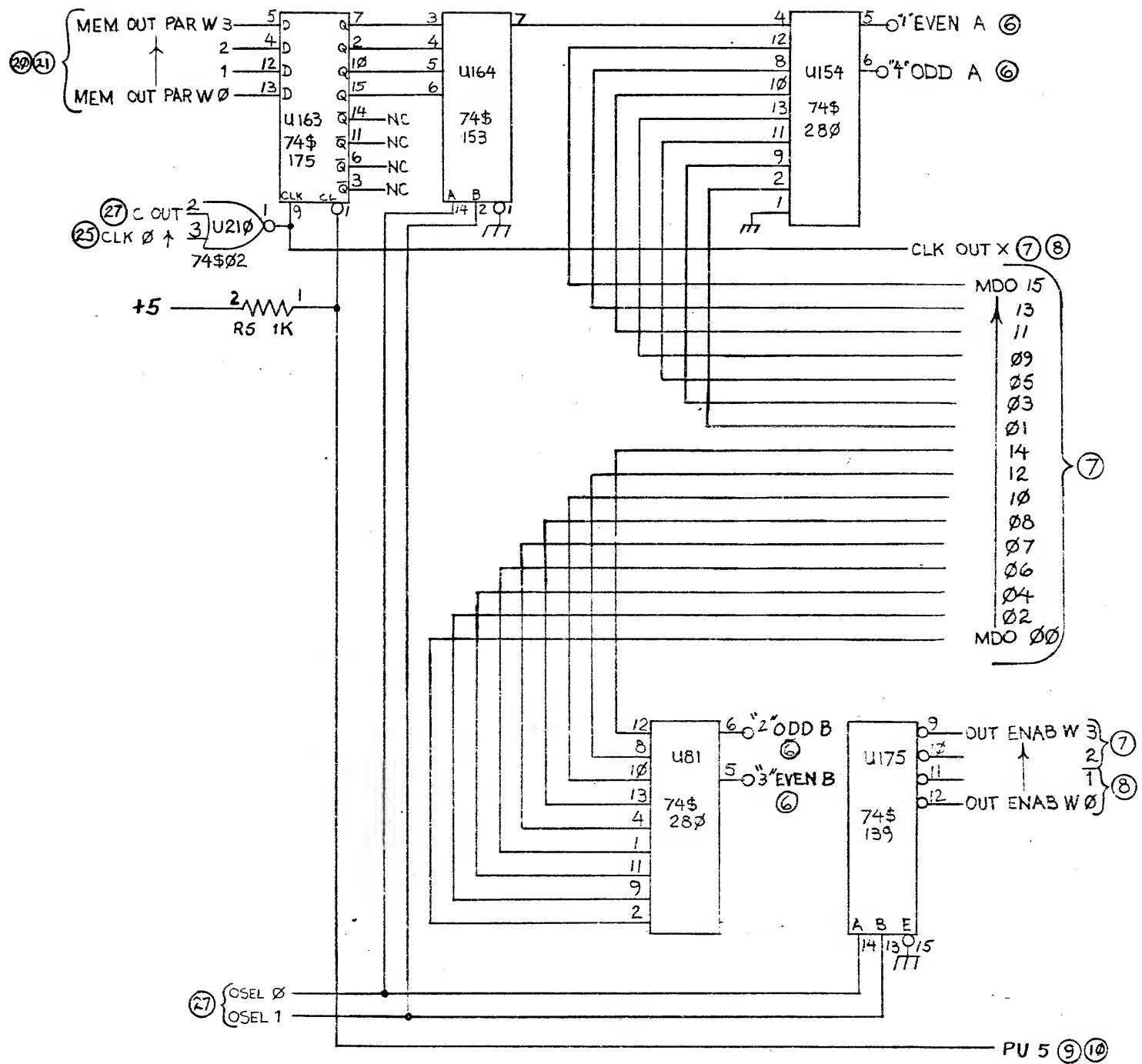


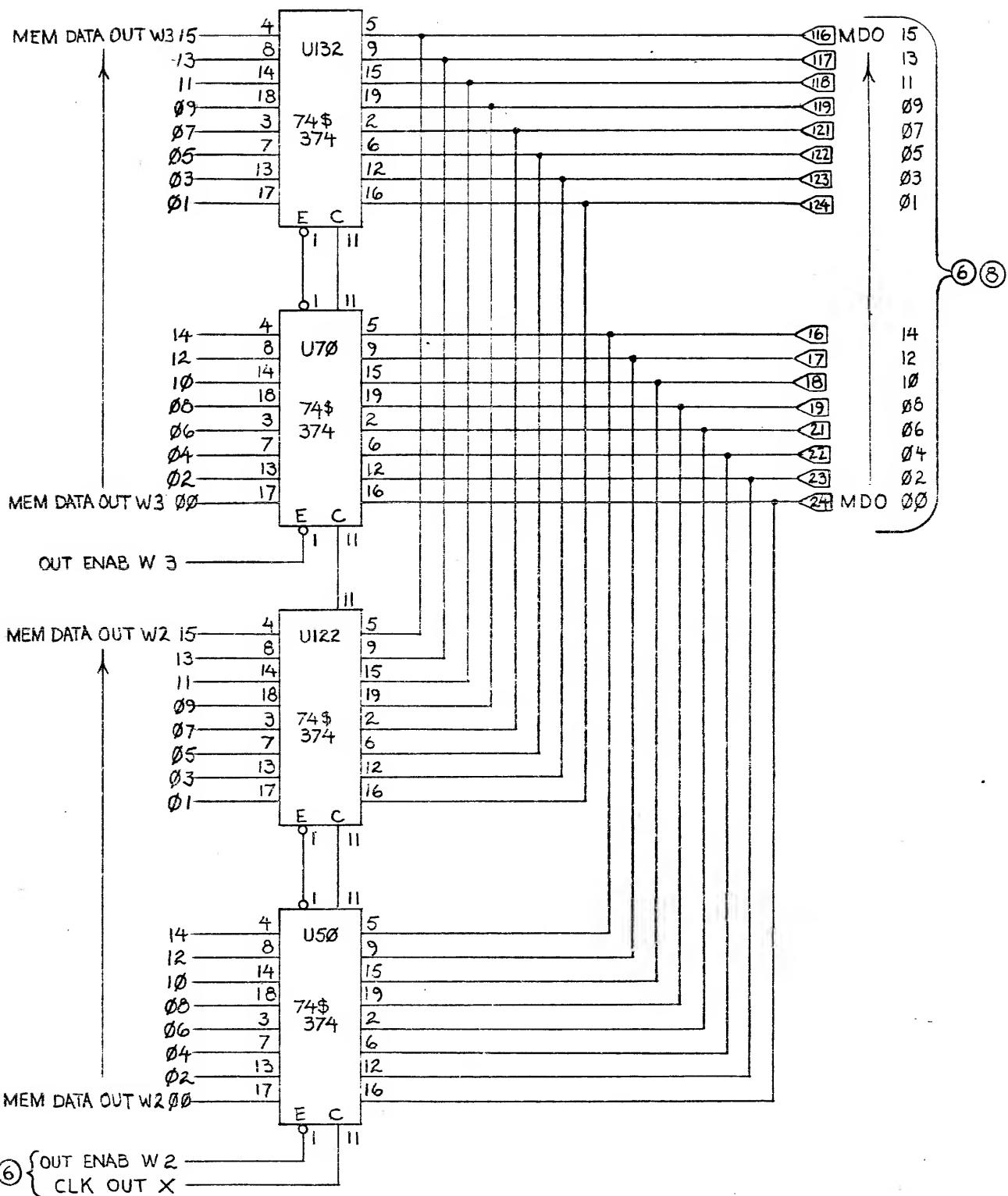


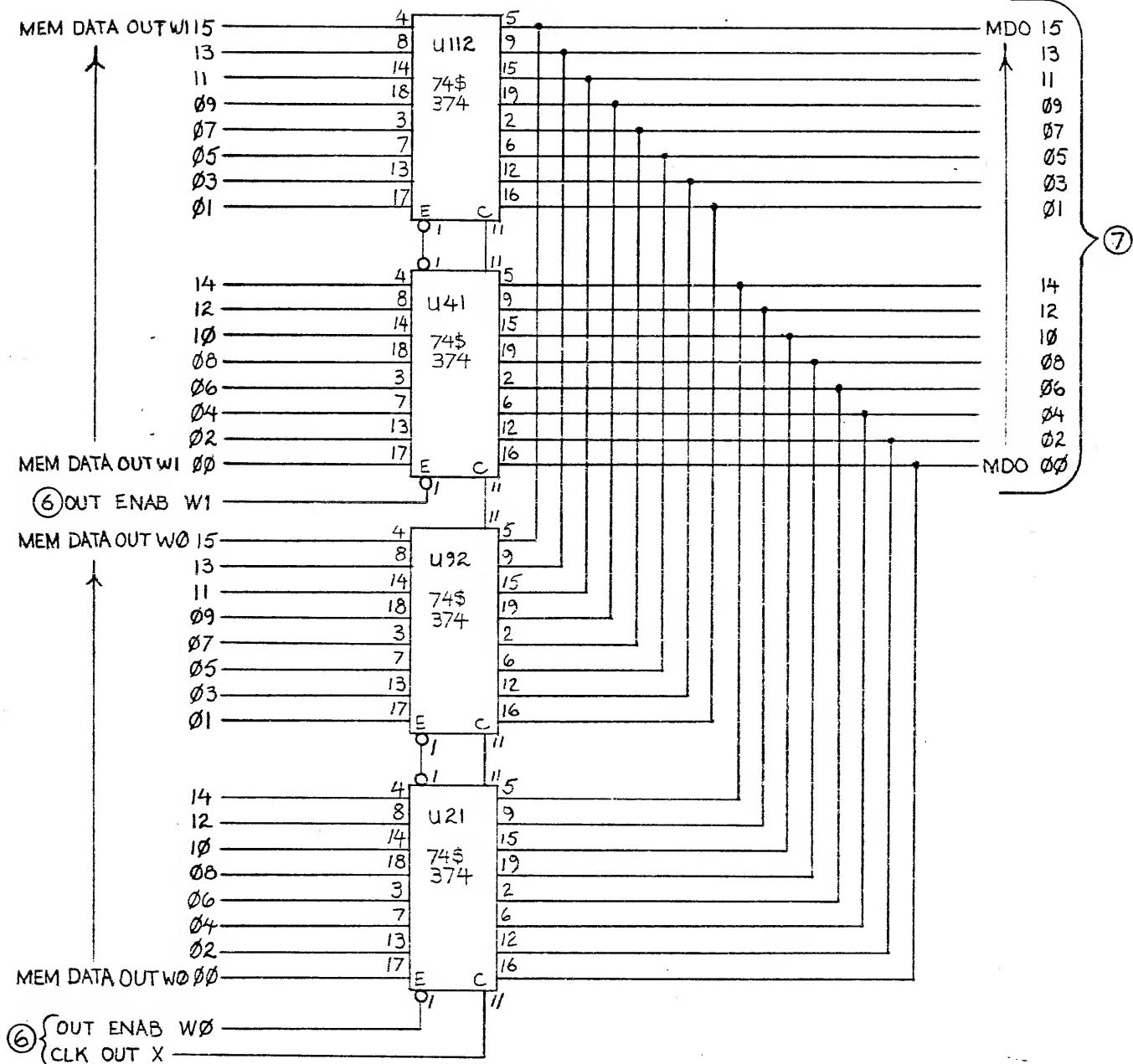




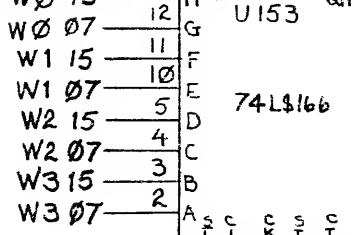




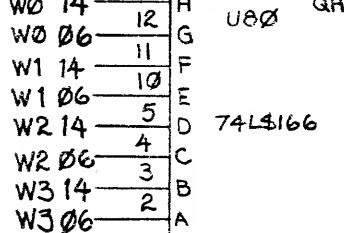




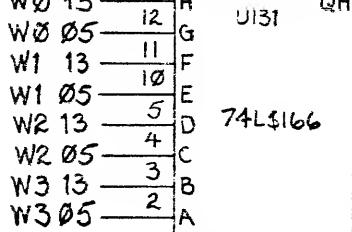
MEM DATA OUT W₀ 15 ————— 14 H U153 QH 13 ————— MEM SHIFT 7 ⑪



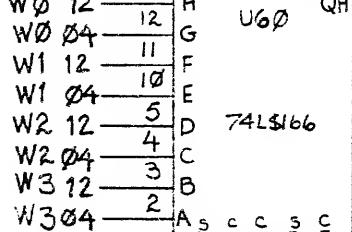
W₀ 14 ————— 14 H U80 QH 13 ————— MEM SHIFT 6 ⑪



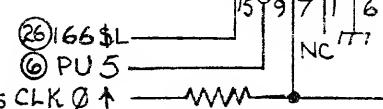
W₀ 13 ————— 14 H U131 QH 13 ————— MEM SHIFT 5 ⑪



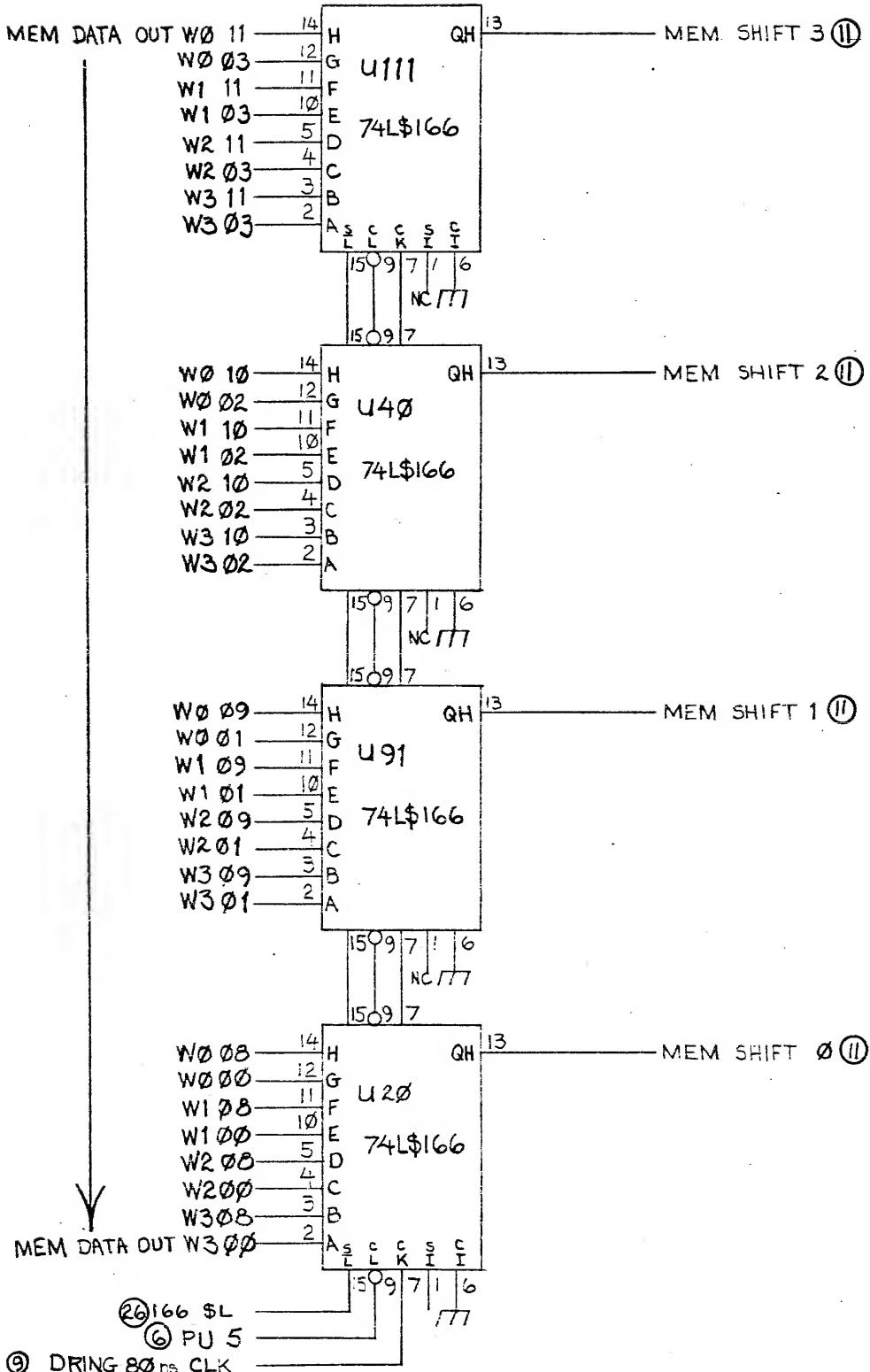
W₀ 12 ————— 14 H U60 QH 13 ————— MEM SHIFT 4 ⑪

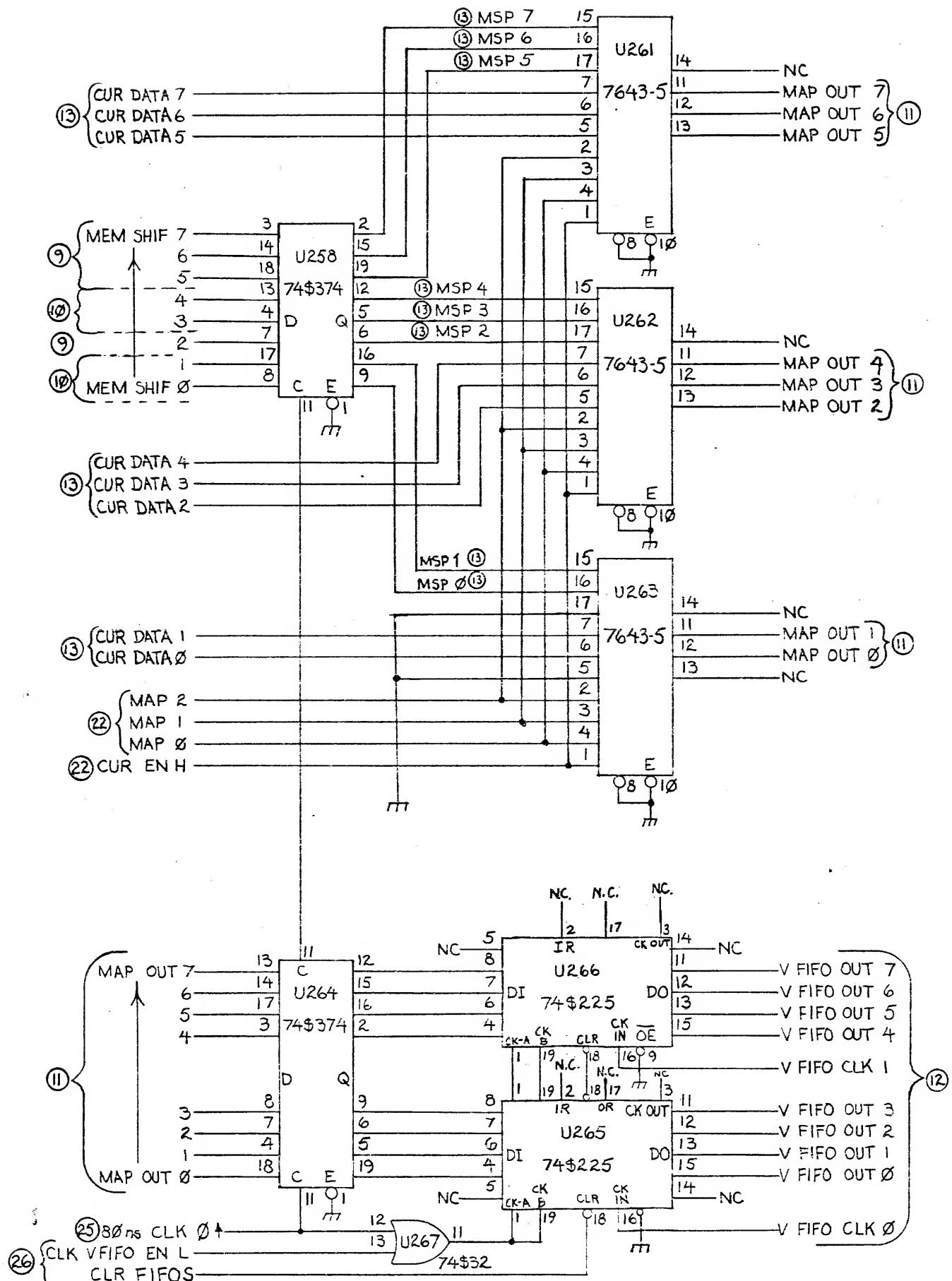


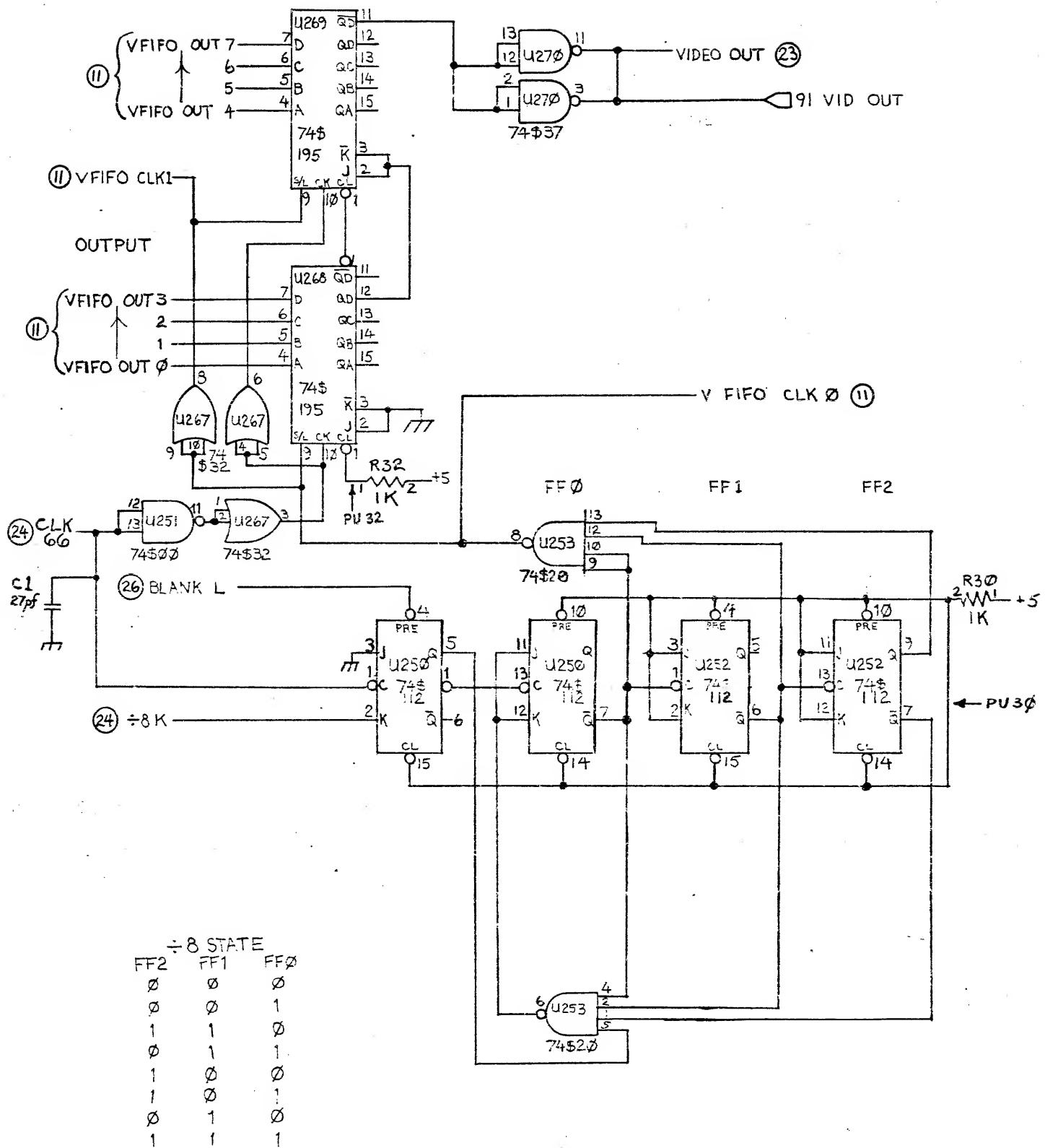
↓
MEM DATA OUT W₃ 04

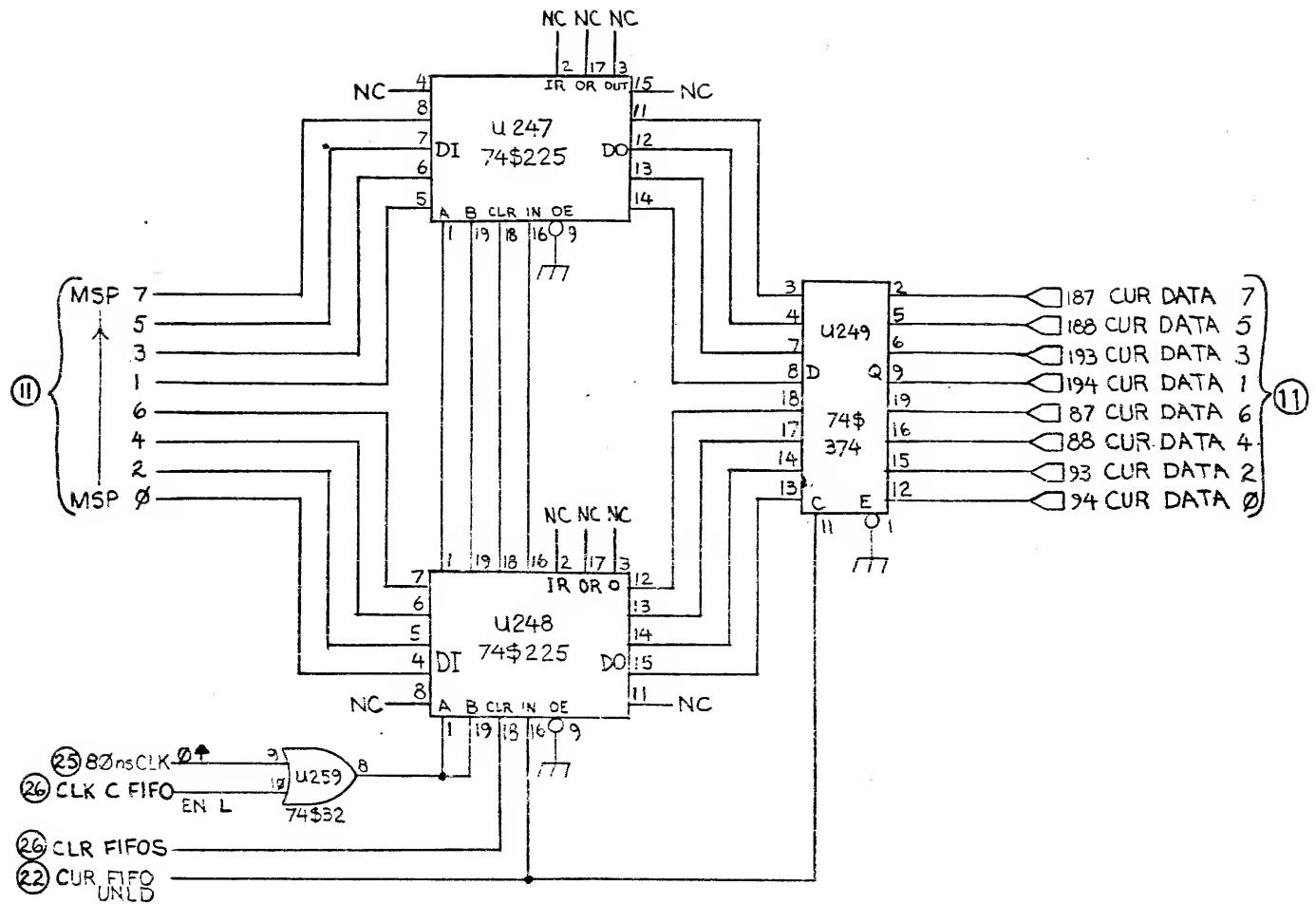


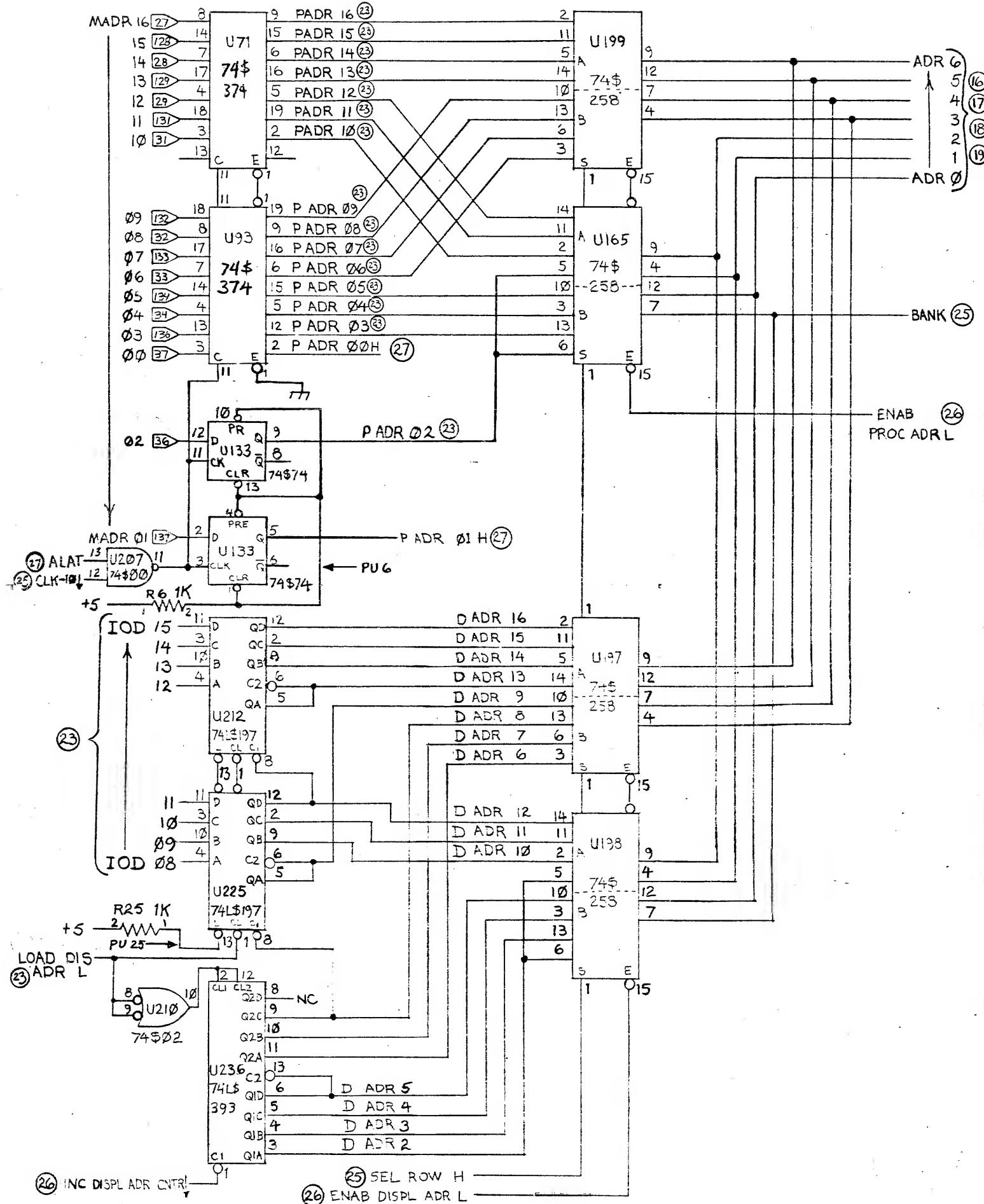
② 80ns CLK 0 ↑ ————— R4 47Ω ————— DRIVING 80ns CLK ⑩





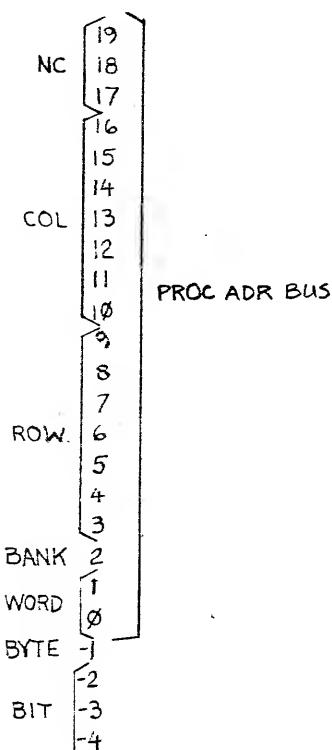
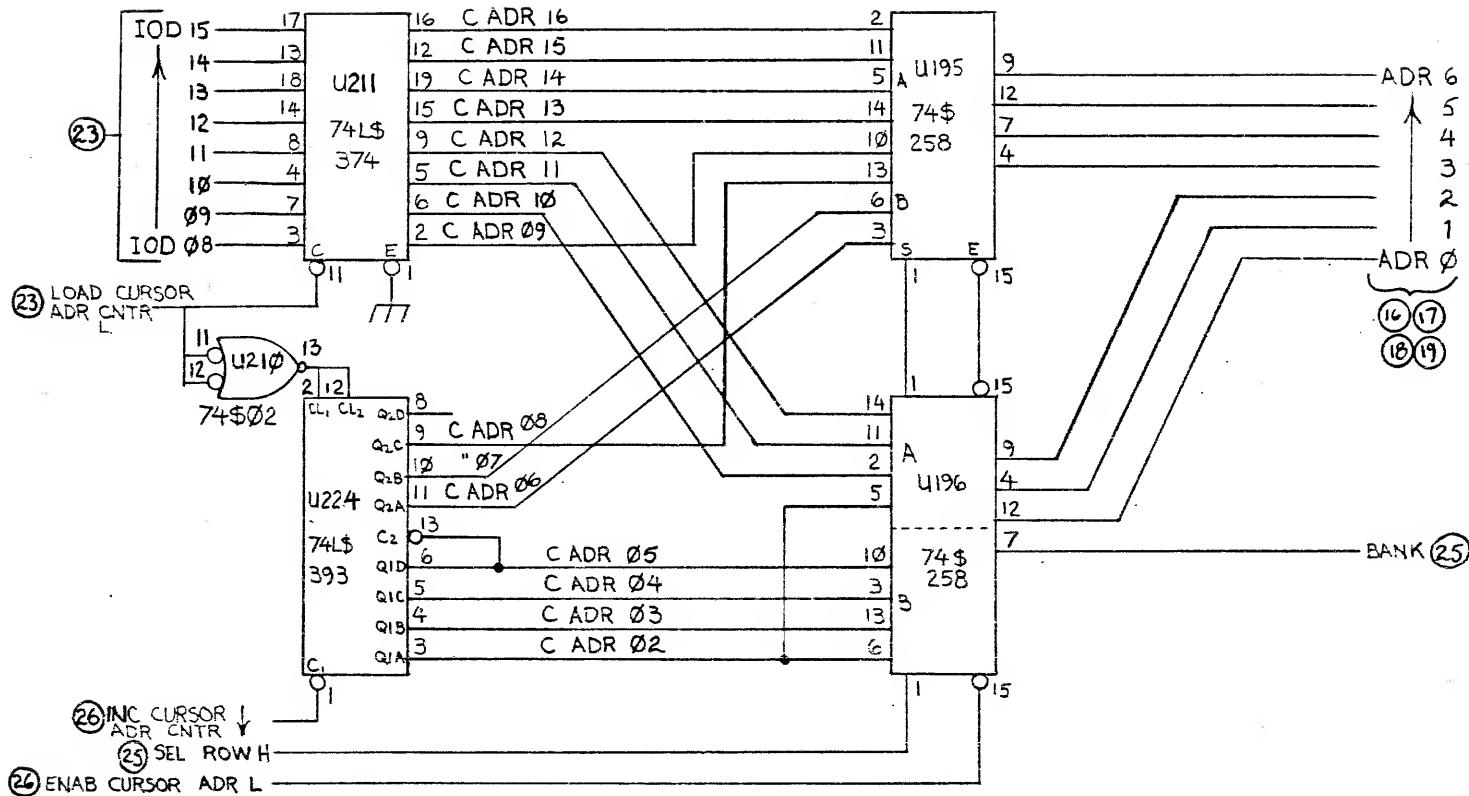


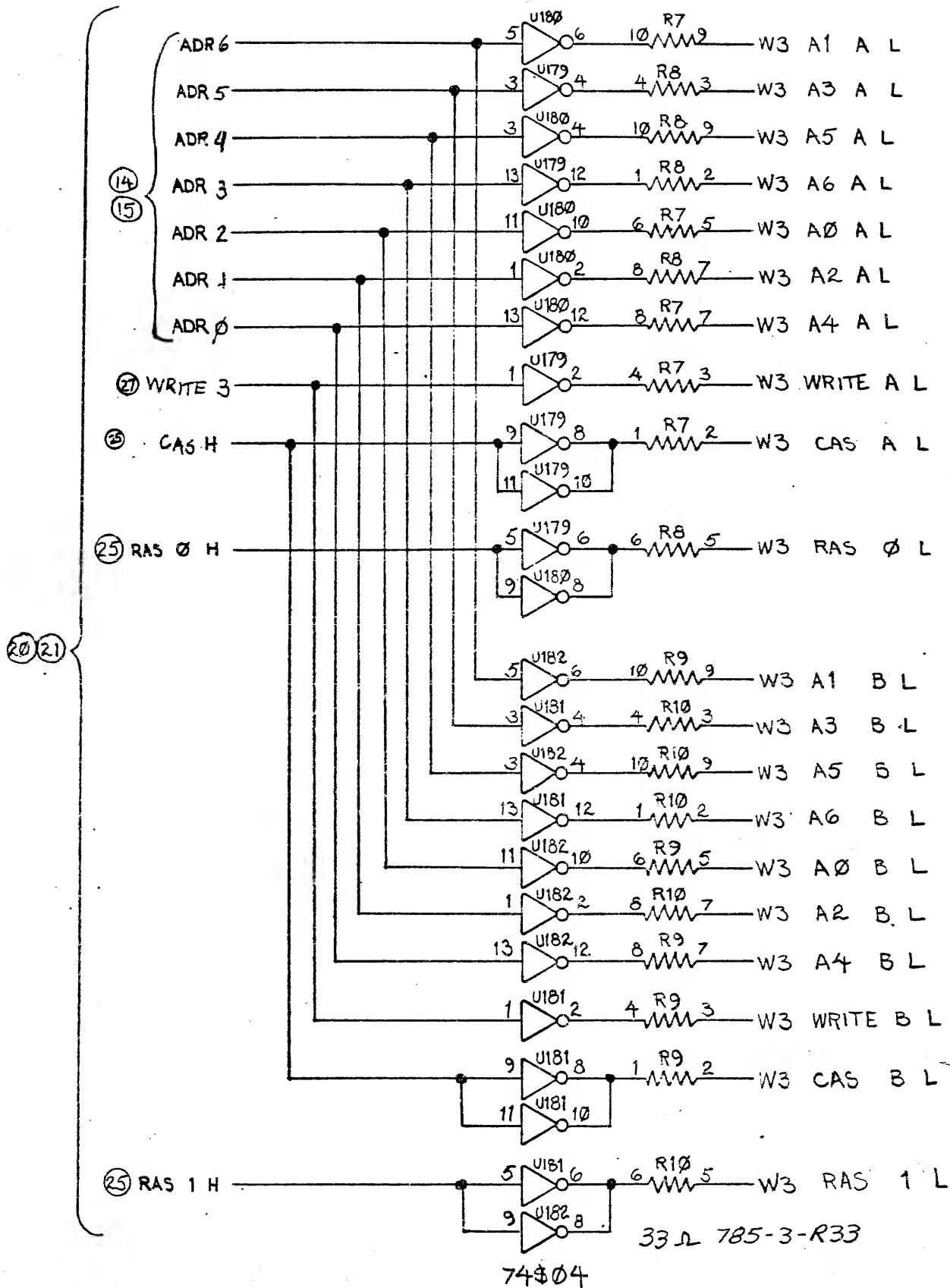


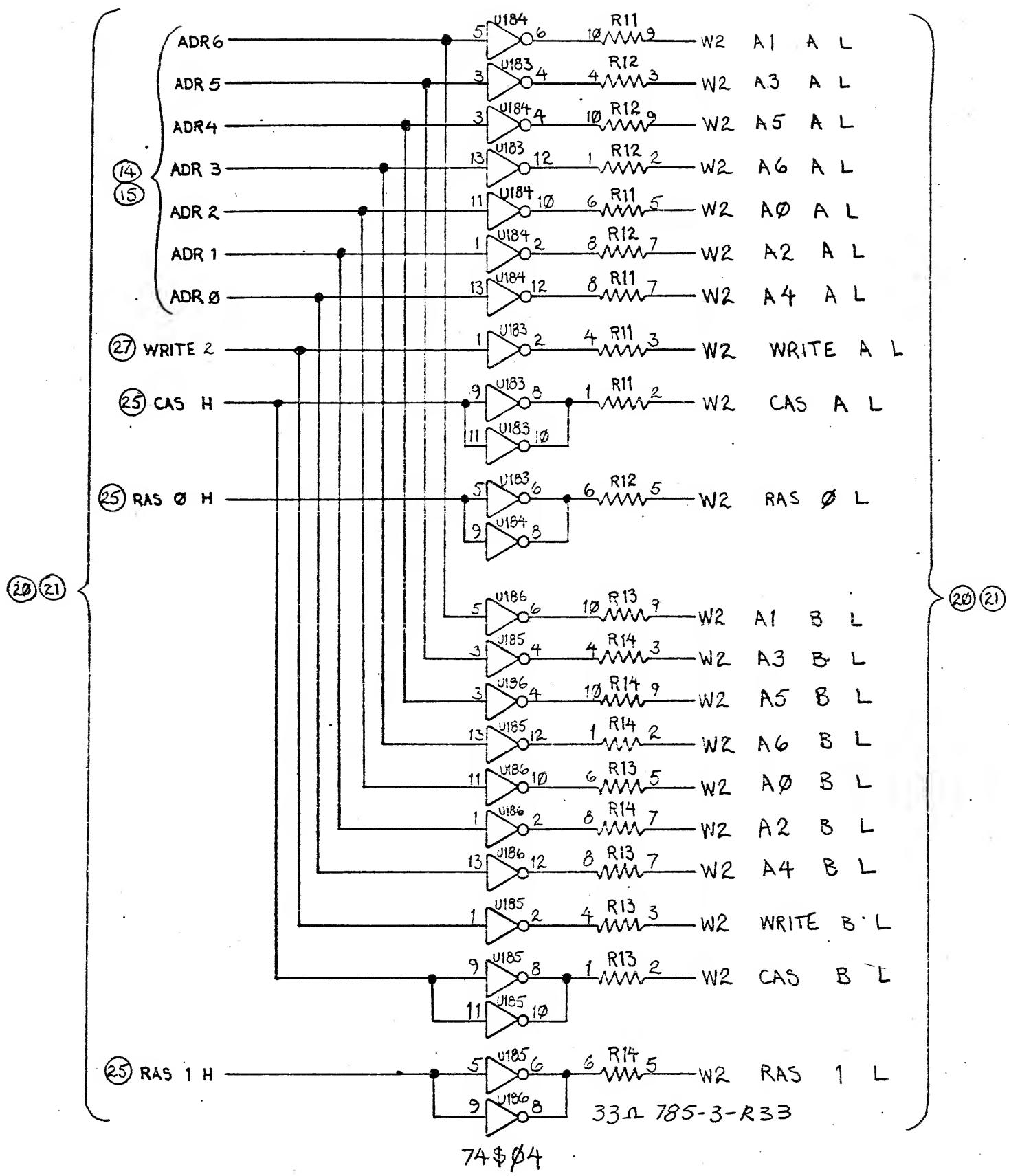


Three Rivers Computer

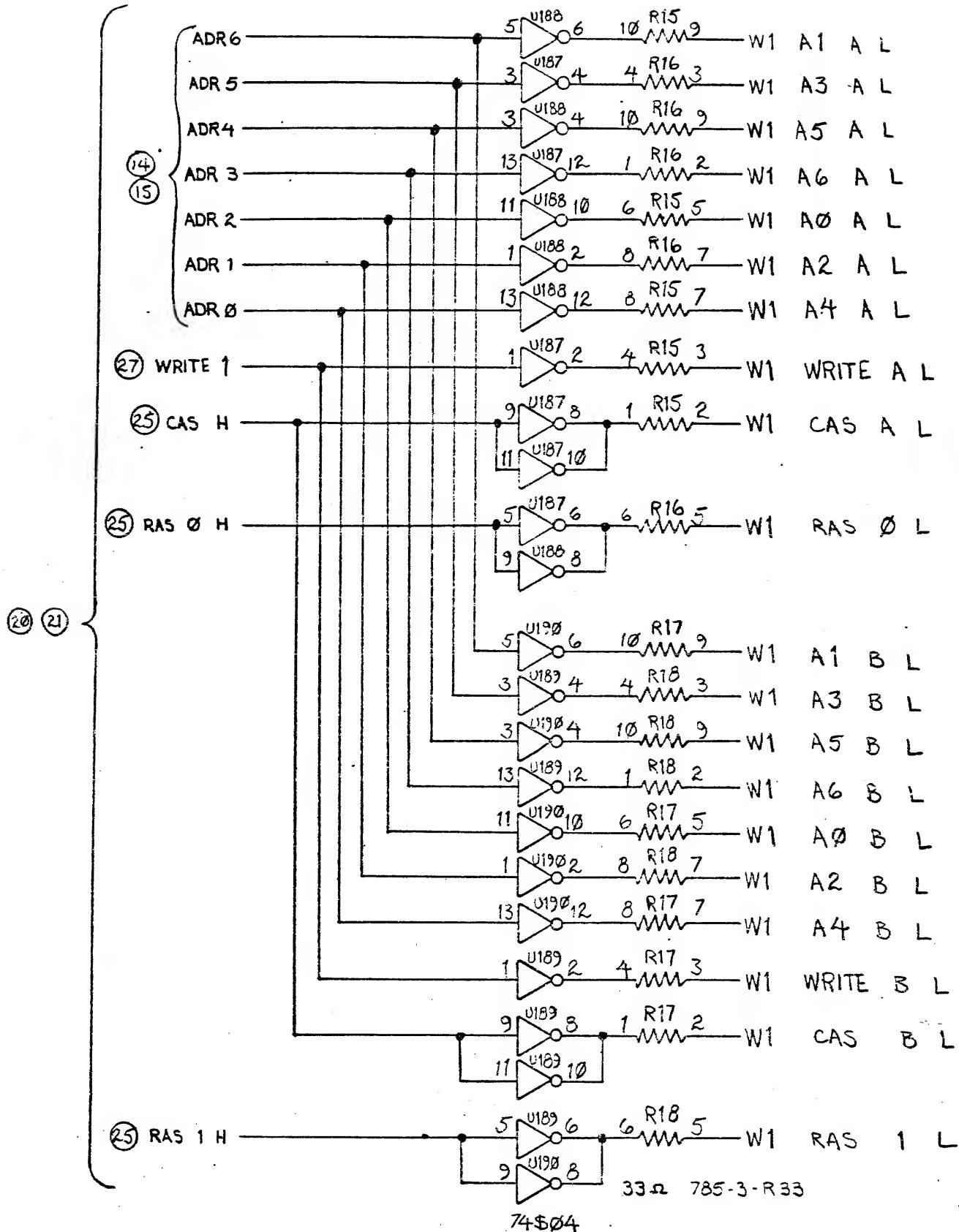
MEM ADR SEL	PERIOD-SELECT
SWITCHES	DATA BUS
SWITCHES	DATA BUS

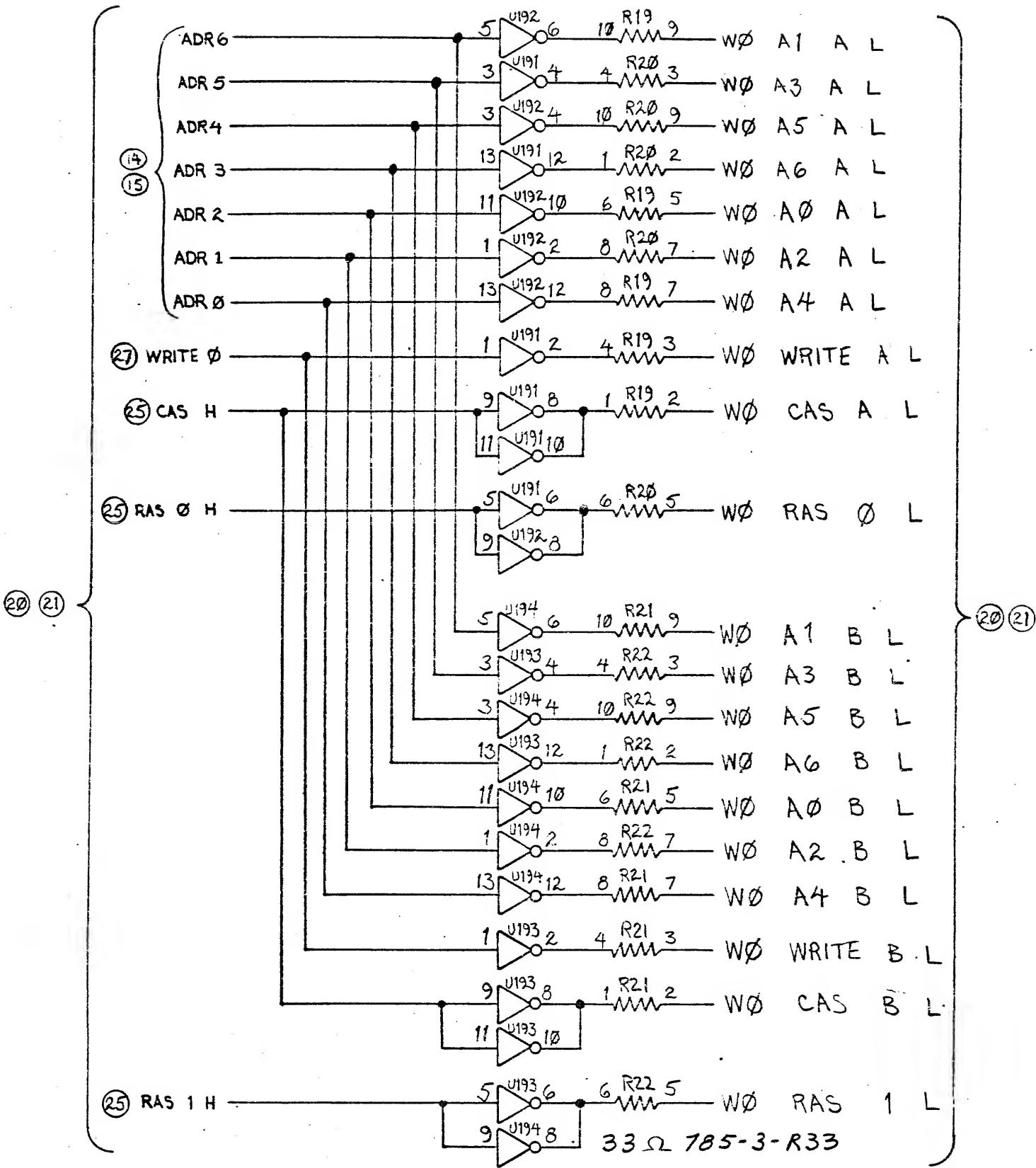






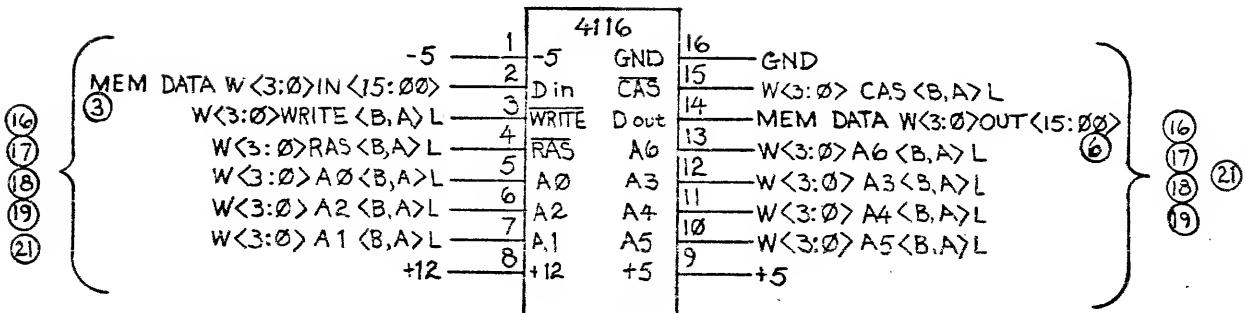
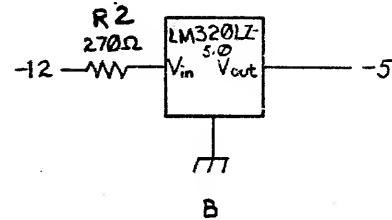
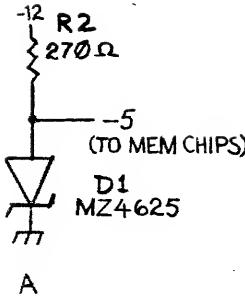
74\$04





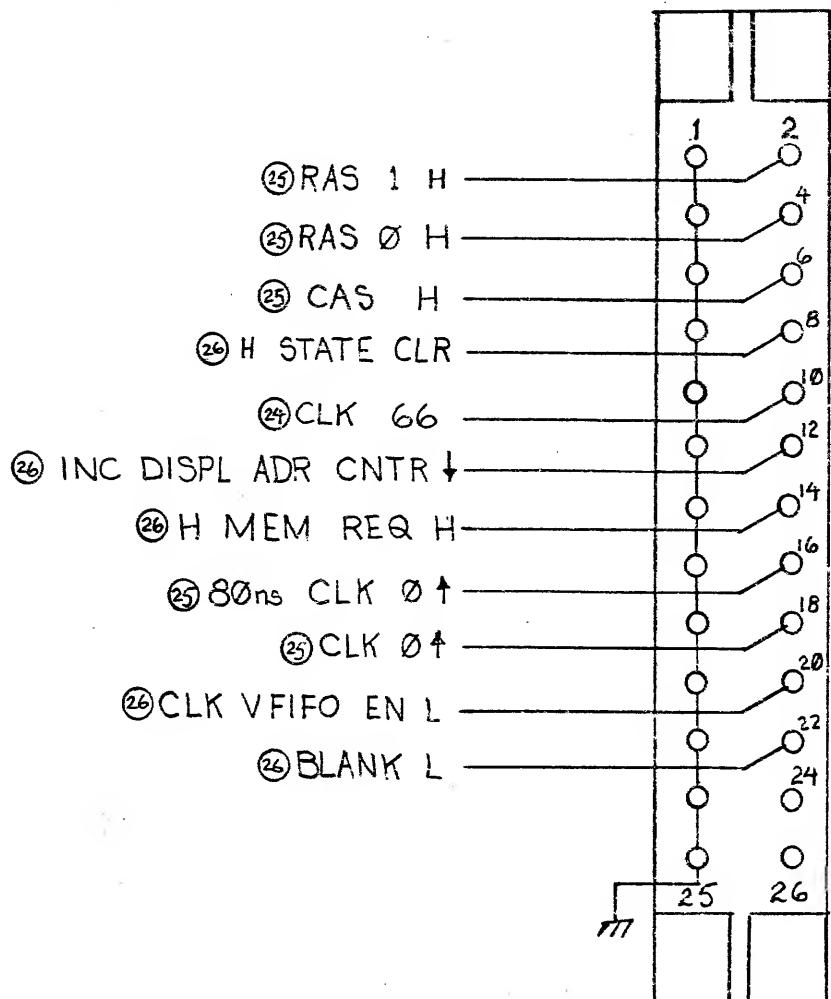
74\$04

-5 VOLTS PRODUCED BY CIRCUIT "A" OR "B"

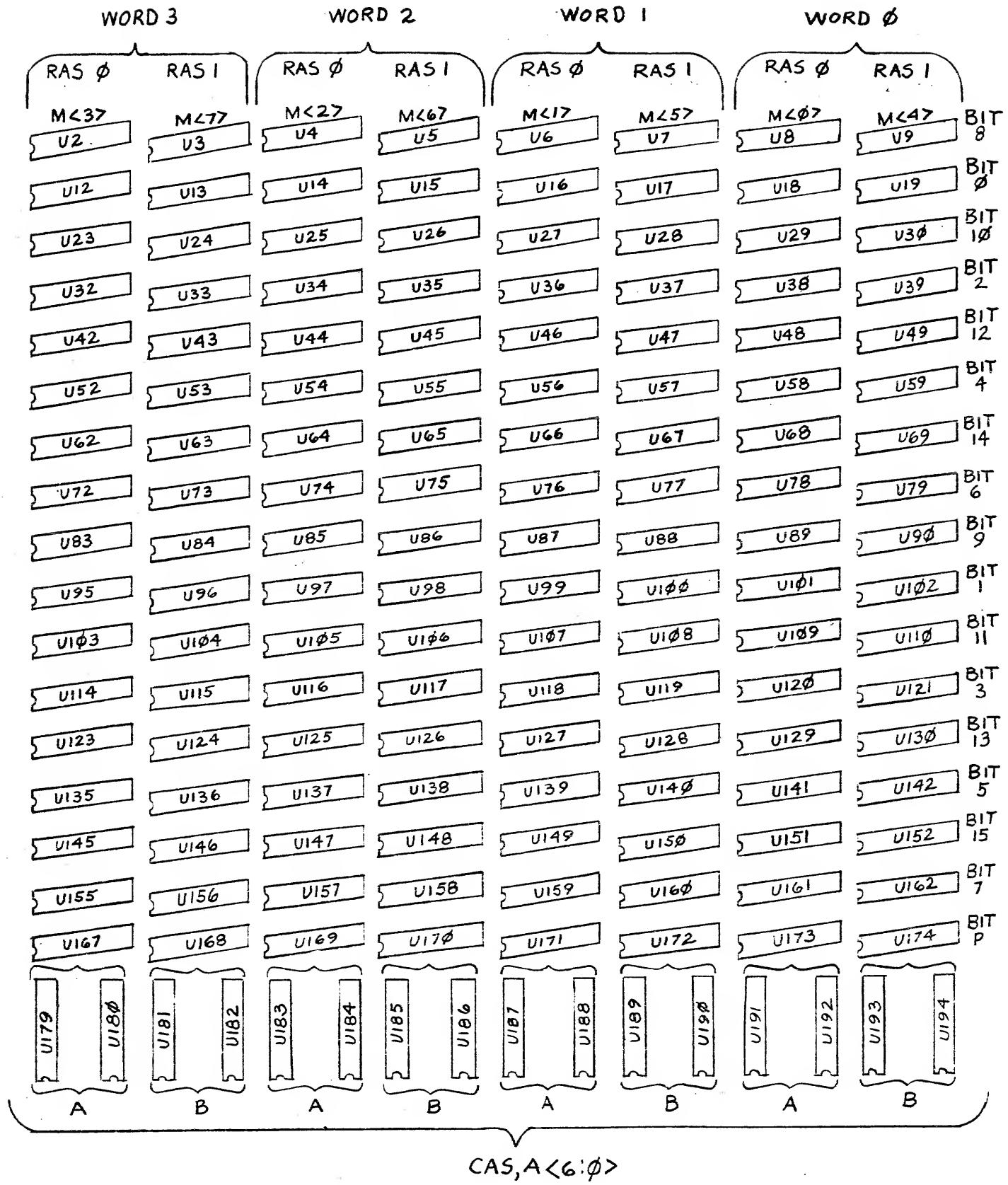


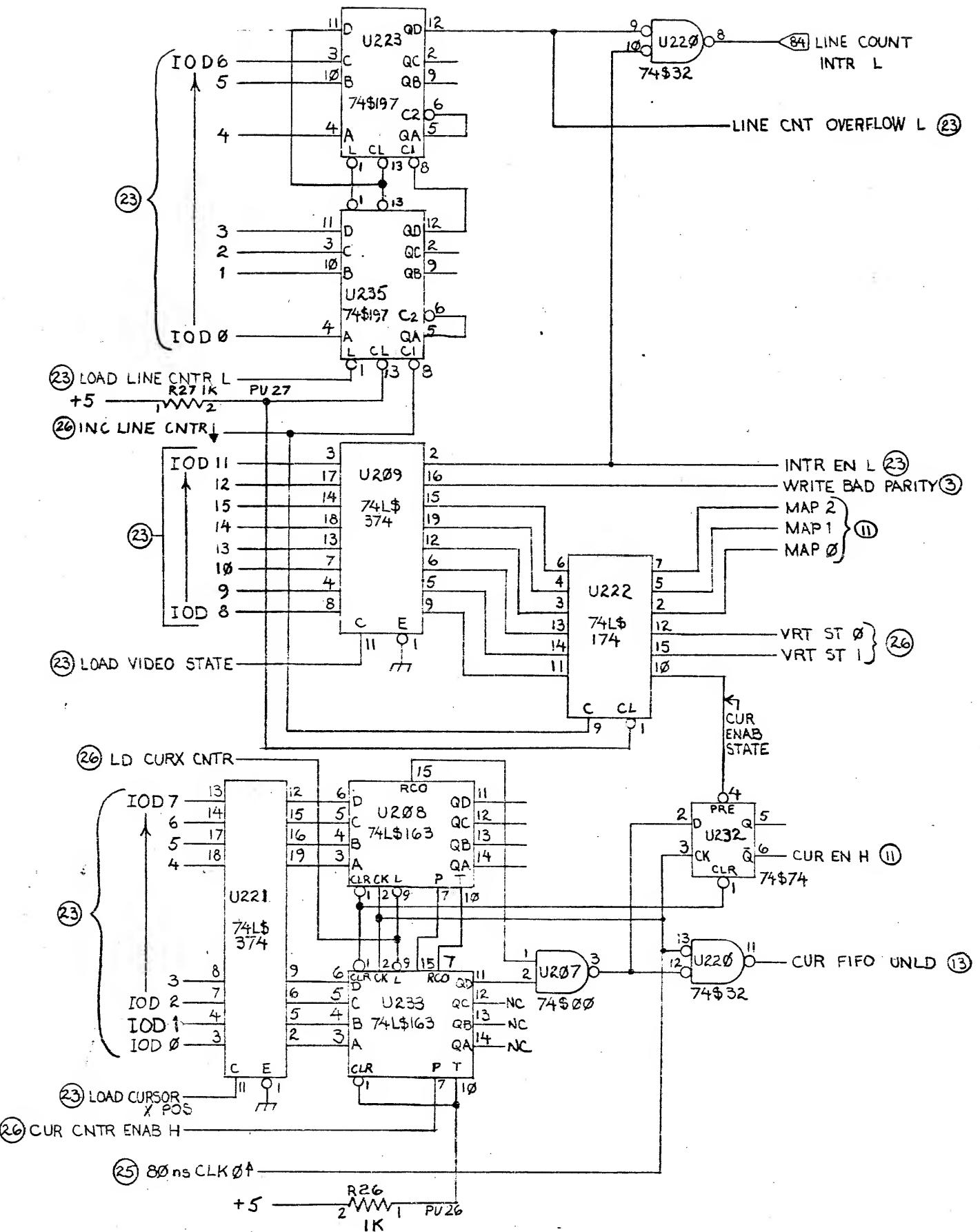
NOTE:

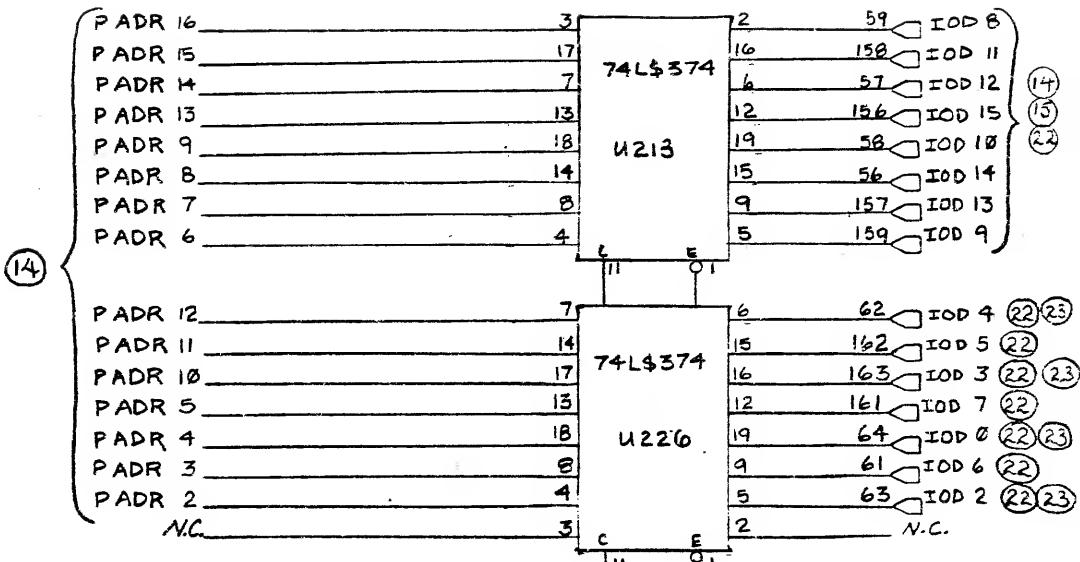
SEE PAGE (2) FOR RAM ARRAY



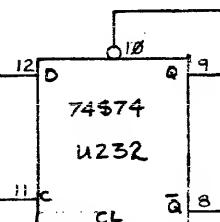
RAS ϕ = BANK ϕ BANK = M[2]
 RAS I = BANK I







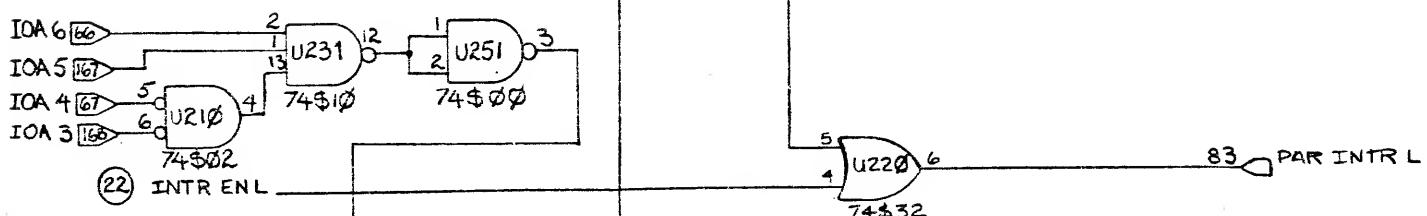
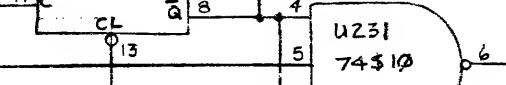
(6) "5" PAR ER H



(27) CLK PAR ER 4

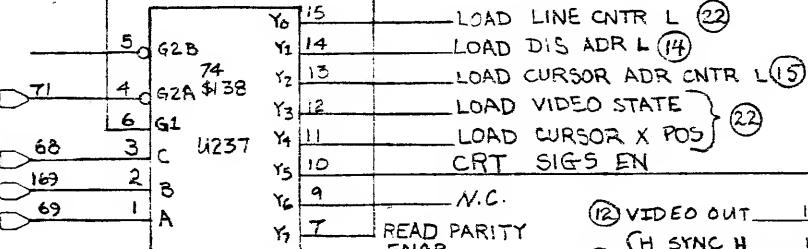
(25) CLK -4↓

(27) CPAR 1



(25) CLK α↑

I/O B ENAB L



IOA 2

IOA 1

IOA 0

G2A 74S138
U237

Y₀
Y₁
Y₂
Y₃
Y₄
Y₅
Y₆
Y₇

LOAD LINE CNTR L (22)

LOAD DIS ADR L (14)

LOAD CURSOR ADR CNTR L (15)

LOAD VIDEO STATE (22)

LOAD CURSOR X POS (22)

CRT SIGS EN

N.C.

READ PARITY

ENAB

VIDEO OUT (12)
(H SYNC H)
(V SYNC H)
LOOP THRU

+5 → R28 1K

(22) LINE CNT OVFLW L

1 t
2 78
TEMP
CAGE
R24
THERMISTOR

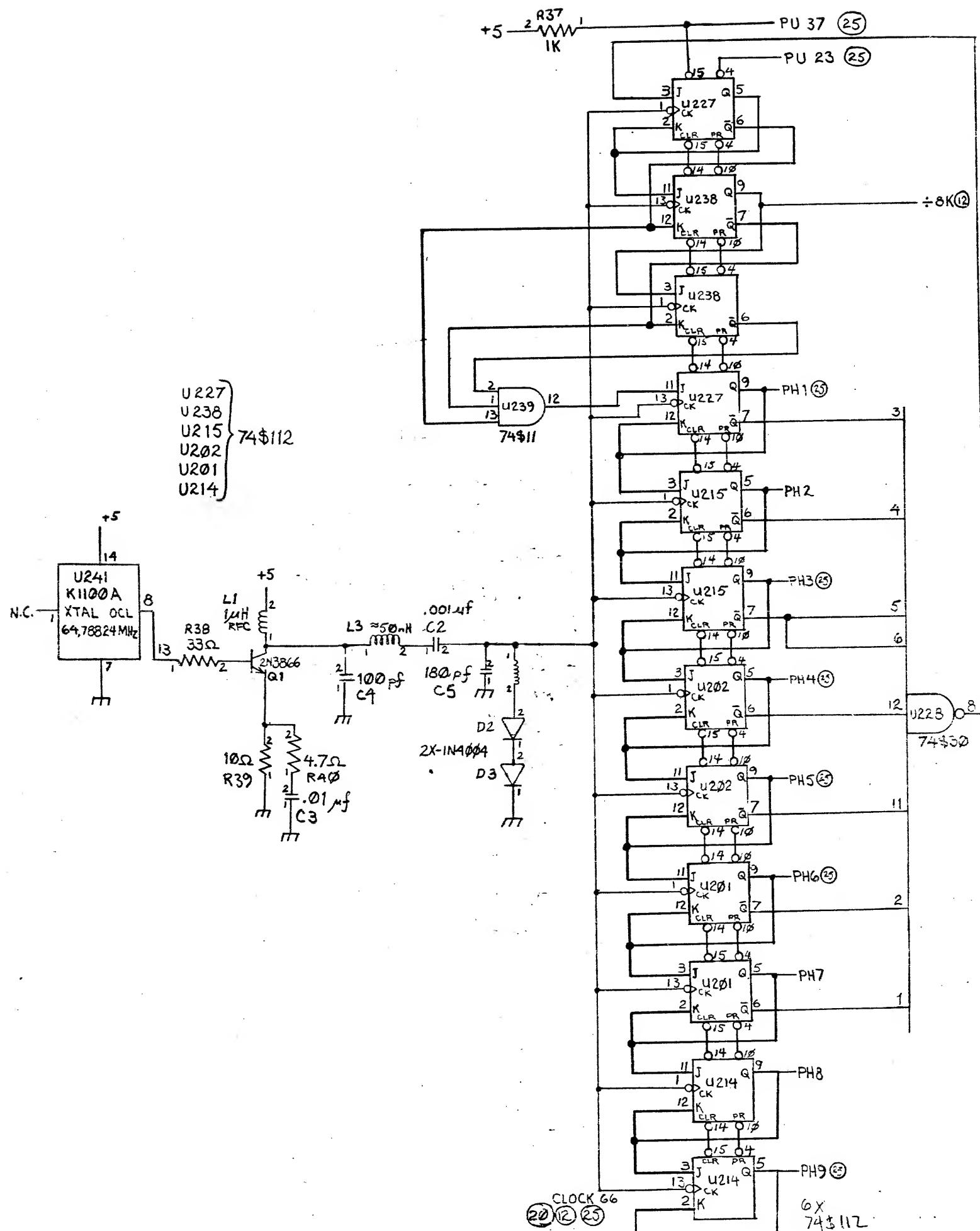
10 190

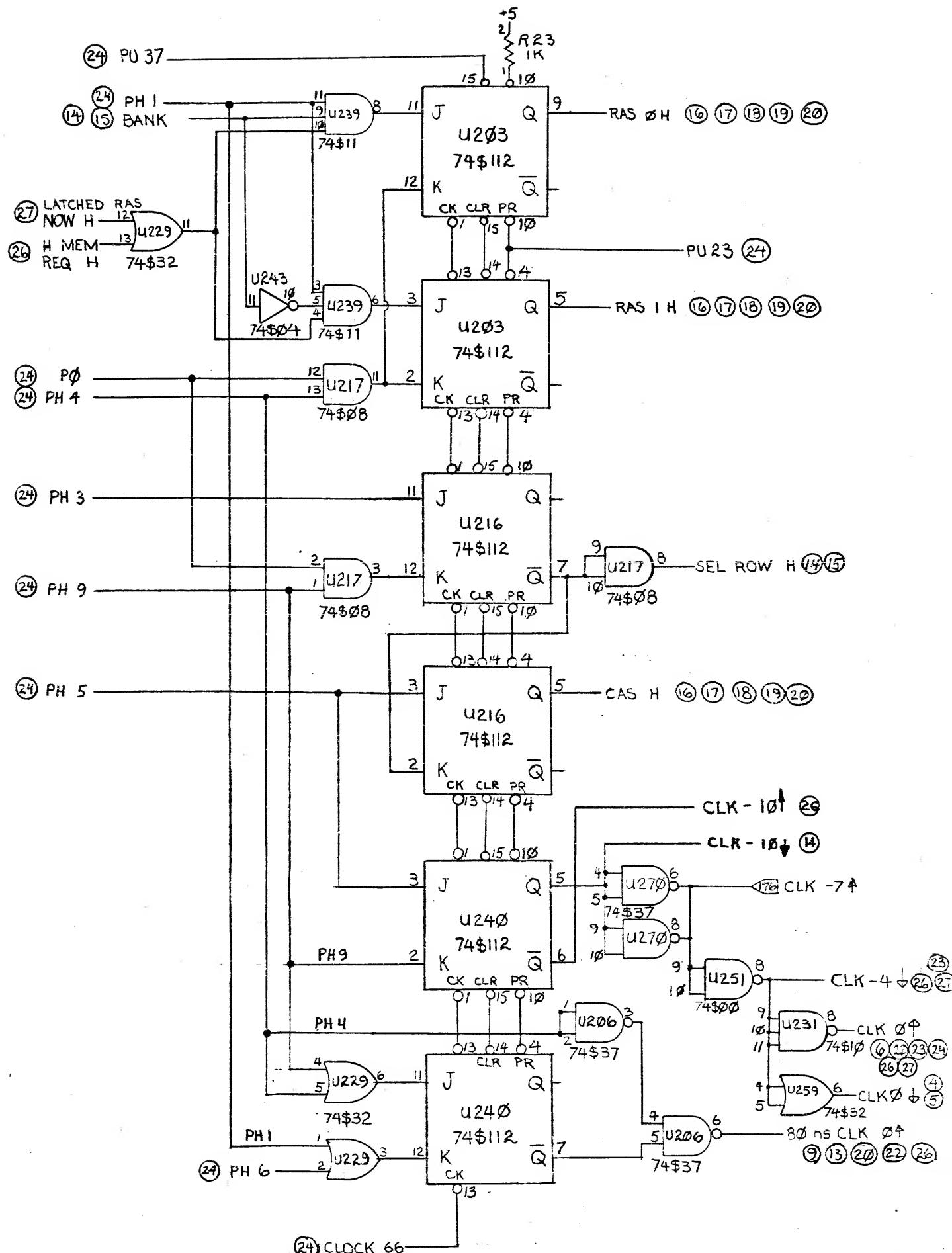
13 7
17 3
15 5
11 9
8 12
6 14
4 16
2 18

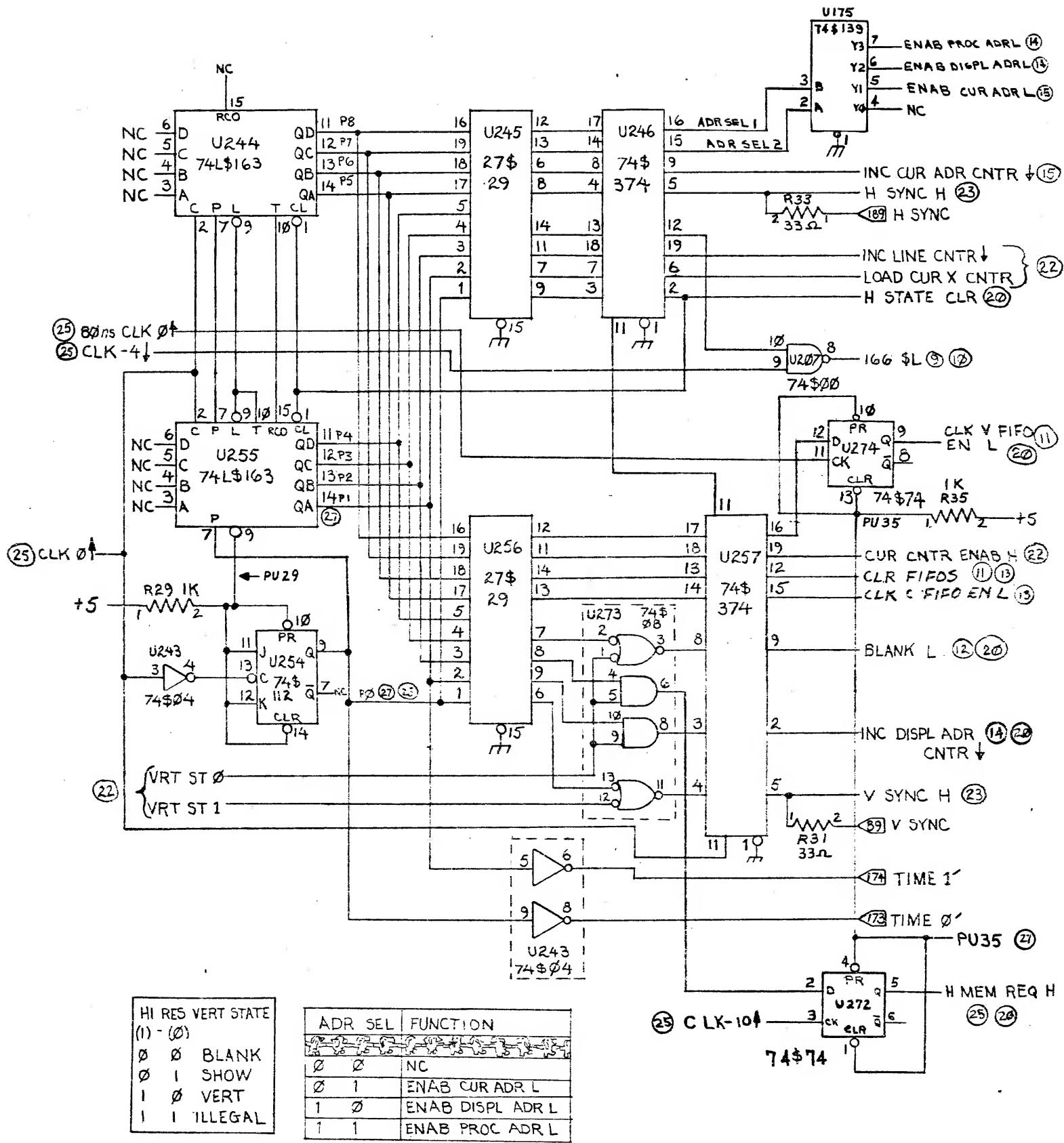
IOD 3
IOD 0
IOD 1 (22)
IOD 2
IOD 4
N.C.
N.C.
N.C.

74LS240
U234

Three Rivers Computer
1/0 REGISTER
FREQ. M.E. 1-1 BAF 11779 SCA-B12E-23-4; -23-27







HI RES VERT STATE		
(1)	-	(Ø)
Ø	Ø	BLANK
Ø	1	SHOW
1	Ø	VERT
1	1	ILLEGAL

ADR SEL	FUNCTION
0 0	NC
0 1	ENAB CUR ADR L
1 0	ENAB DISPL ADR L
1 1	ENAB PROC ADR L

